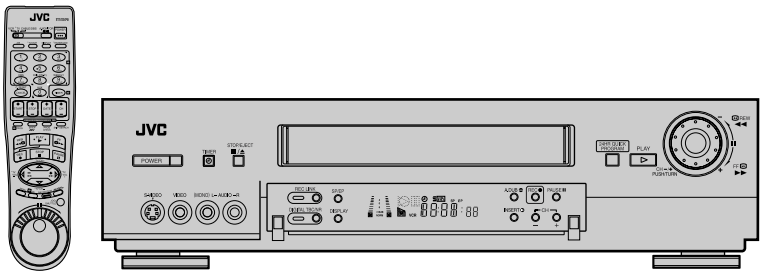
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S9911U



S-VHS Hi-Fi

VCR Plus+ 3 CABLE BOX CONTROL

Super VHS ET

Regarding service information other than these sections, refer to the service manual No. 82805 (HR-S9800U). Also, be sure to note important safety precautions provided in the service manual.

SPECIFICATIONS

GENERAL

Power requirement	: AC 120 V ∼ , 60 Hz
Power consumption	
Power on	: 26 W
Power off	: 2.5 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: –20°C to 60°C (–4°F to140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 435 mm x 105 mm x 343 mm (17-3/16" x 4-3/16" x 13-9/16")
Weight	: 4.9 kg (10.8 lbs)
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	
VHS	: 230 lines
S-VHS	: 400 lines
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) S-video connectors (IN x 2, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2–13
UHF	: Channels 14–69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs
Memory backup time	: Approx. 3 min.

ACCESSORIES

Provided accessories	: Infrared remote control unit, "AA" battery x 2, Audio/video cable, RF cable (F-type), S-video cable (4-pin), Controller

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

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SECTION 3
ELECTRICAL ADJUSTMENT
The difference point(s) compared with the reference model are as follows.

DELETE

3.2.3 Dynamic Drum preset

Adjustment value is changed.

3.3.5 Video EQ (Frequency response)

Specified value (G)	• SP : 2.8 ± 0.3 div (–3 ± 1dB) • EP : 2.8 ± 0.3 div (–3 ± 1dB)

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

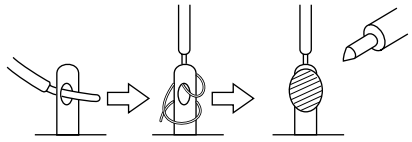


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

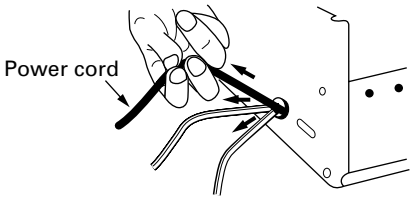


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

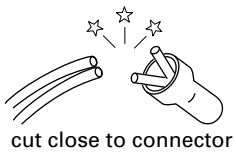


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

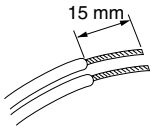


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

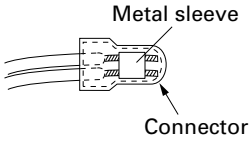


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

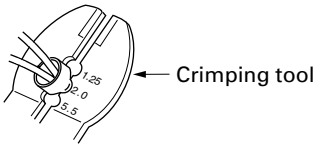


Fig.6

(5) Check the four points noted in Fig.7.

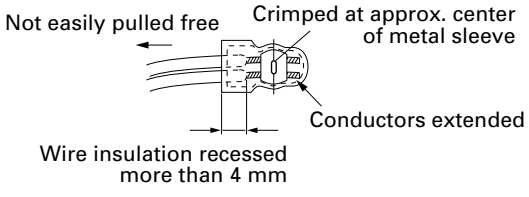

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

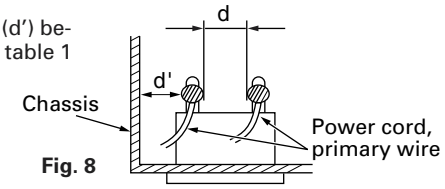


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

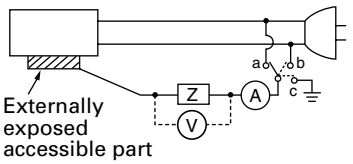


Fig. 9

5. Grounding (Class Ⅰ model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

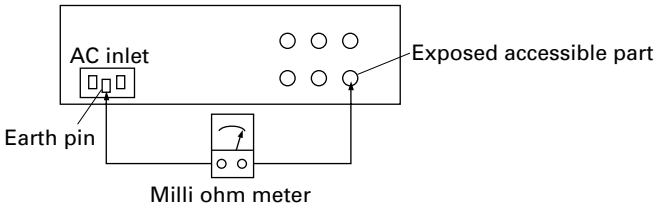


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

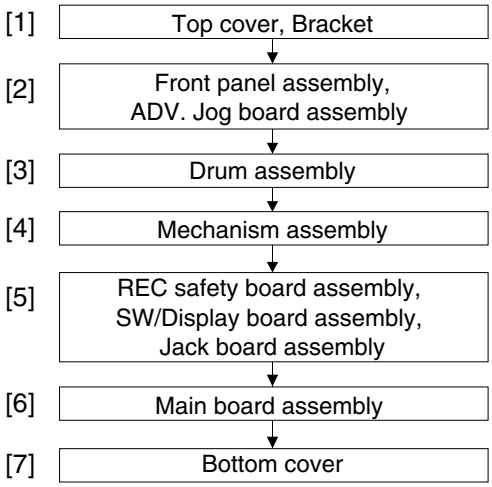
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
DISASSEMBLY

1.1 Disassembly flow chart

This flowchart lists the disassembling steps for the cabinet parts and P. C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 How to read the disassembly and assembly

<Example>

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), 2(S1c)	<Note 1a>

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig. No. showing procedure or part location.
(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

Note:

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

1.3 Disassembly/assembly method

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a) 2(S1c)	
[2]	Front panel assembly (ADV. Jog board assembly)	D2	CN3012(WR2a) 4(L2a), 2(L2b),3(L2c) 2(S2a)	<Note 2a> <Note 2b>
[3]	Drum assembly	D3	CON1(WR3a), CN1(WR3b), (S3a), (S3b), (S3c)	<Note 2b>
[4]	Mechanism assembly	D4	CN2001(WR4a), (S4a), (S4b), (S4c), (S4d),2(L4a)	<Note 2b> <Note 4a>
[5]	REC safety board assembly, SW/Display board assembly Jack board assembly	D5	(L5a), CN7001(WR5a),4(L5b) CN7191(WR5b)	<Note 2b> <Note 5a> <Note 5b>
[6]	Main board assemby	D6	(S6a),3(S6b),2(S6c)	
[7]	Bottom cover	D7	4(L7a), Foot (rear), 4(L7b), Foot ass'y, 2 (S7a), 4 (L7c), 3 (L7d)	<Note 7a>

<Note 2a>

- When reattaching the Front panel assembly, make sure that the door opener "a" of the Cassette holder assembly is lowered in position prior to the reinstallation.
- When reattaching the Front panel assembly, pay careful attention to the jack "b" at the Jack board assembly to make it fit the hole of the Front panel assembly.

<Note 2b>

- Be careful not to damage the connector and wire etc. during connection and disconnection. When connecting the wire to the connector, be careful with the wire direction.

<Note 4a>

- When it is required to remove the screws (S4a to S4b) retaining the Mechanism assembly, please refer to the "Procedures for Lowering the Cassette holder assembly". (See on pages 1-2.)
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.
- The wire (WR4a) has excess length that may be loose, as it is quite long. After inserting the wire and connectors, the loose portion of the wire should be taken up and accommodated between the A/C head base and the main deck.

<Note 5a>

- The REC safety board assembly is attached to the SW/Display board assembly. It is therefore necessary to remove the REC safety board assembly before removing the SW/Display board assembly.

<Note 5b>

- When reattaching the Jack board assembly, should be attach the Jack board assembly to the Bottom chassis before attaching the SW/Display board assembly.

<Note 7a>

- When attaching the Bottom cover, make sure that the Earth plate of the Bottom cover is passed through the hole of the Bottom chassis and then touches the GND (Ground) on the Main board assembly.

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

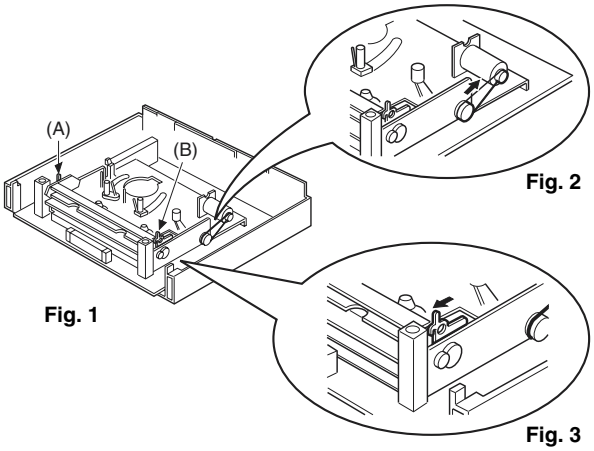


Fig. 1

Fig. 2

Fig. 3

Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A), (B), (B), (A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

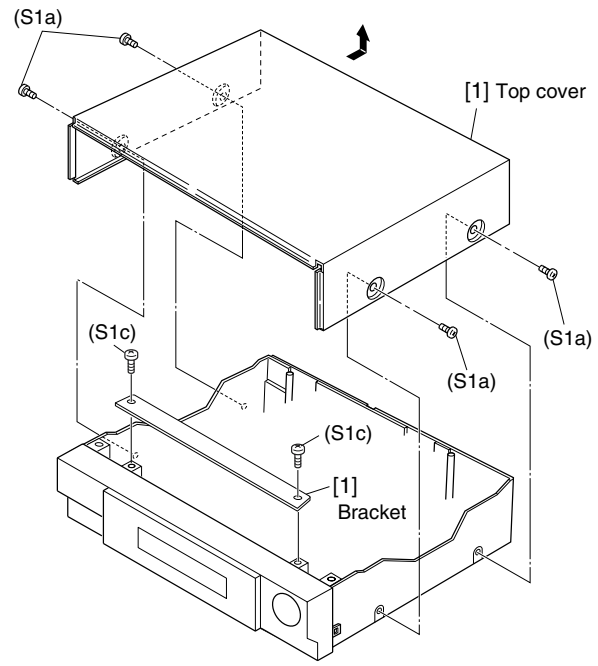


Fig. D1

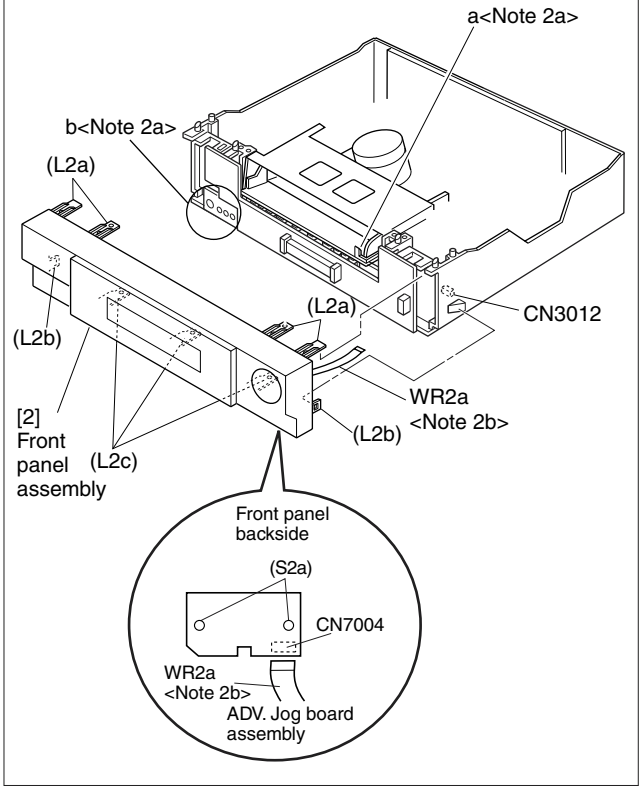


Fig. D2

Note: When installing the Drum assembly, secure the screws (S3a to S3c) in the order of a, b, c.

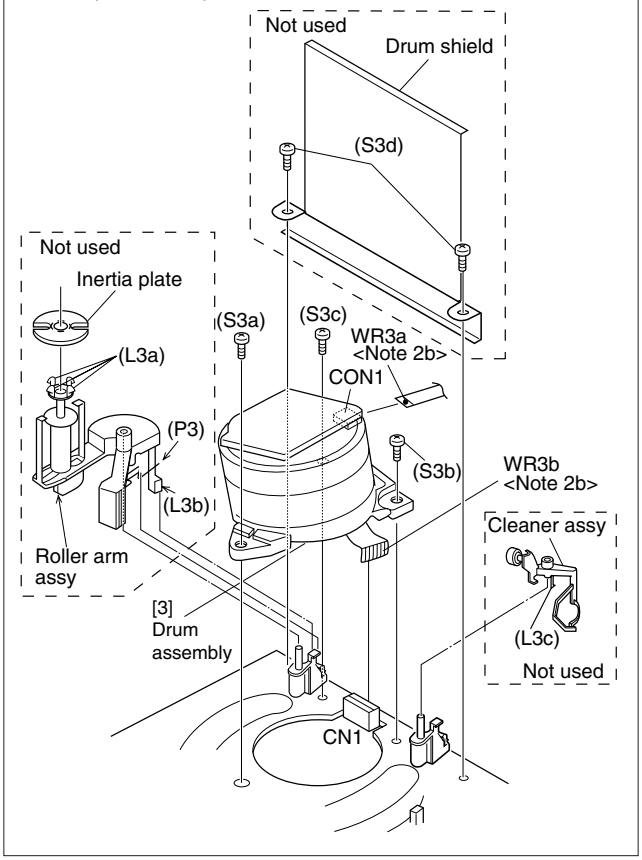


Fig. D3

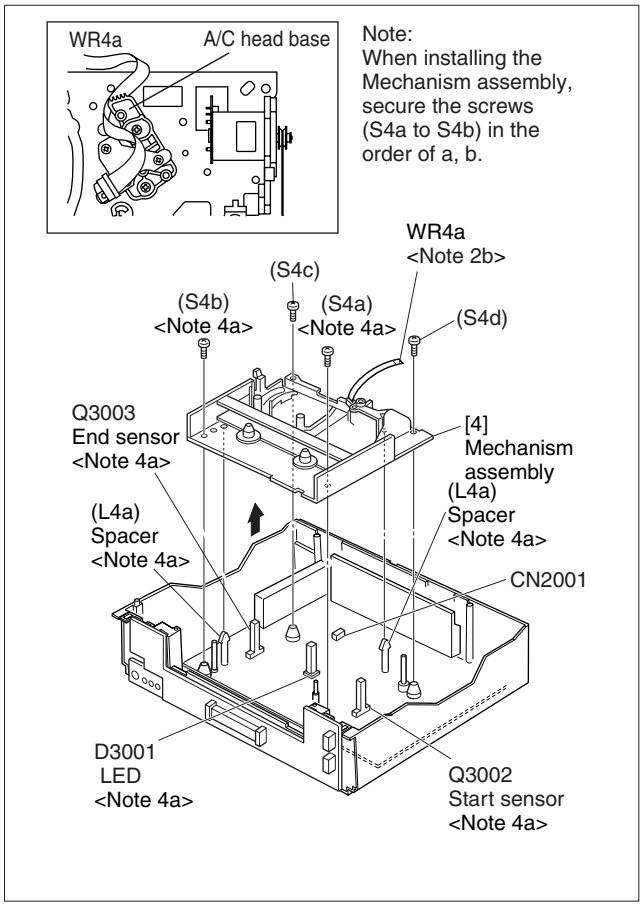


Fig. D4

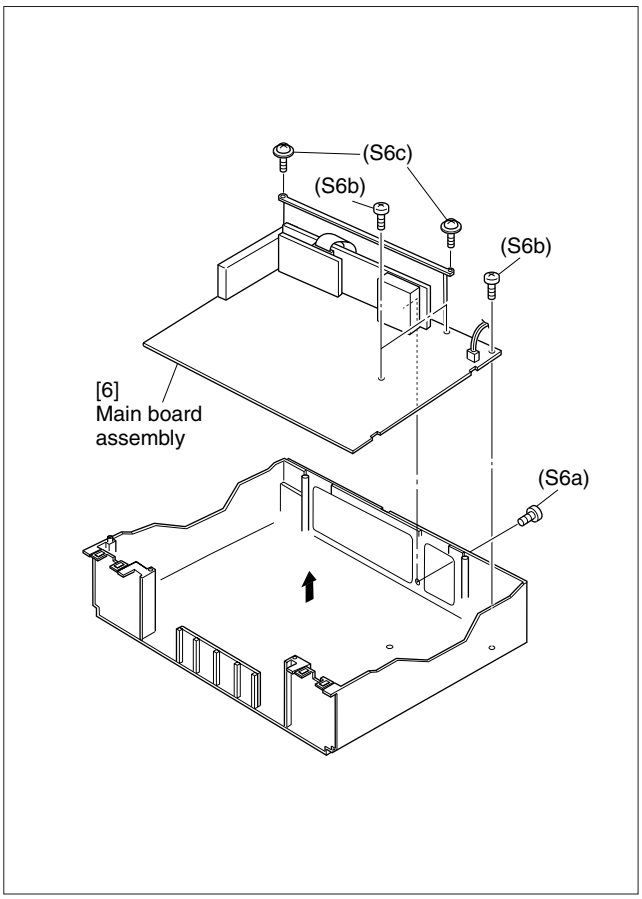


Fig. D6

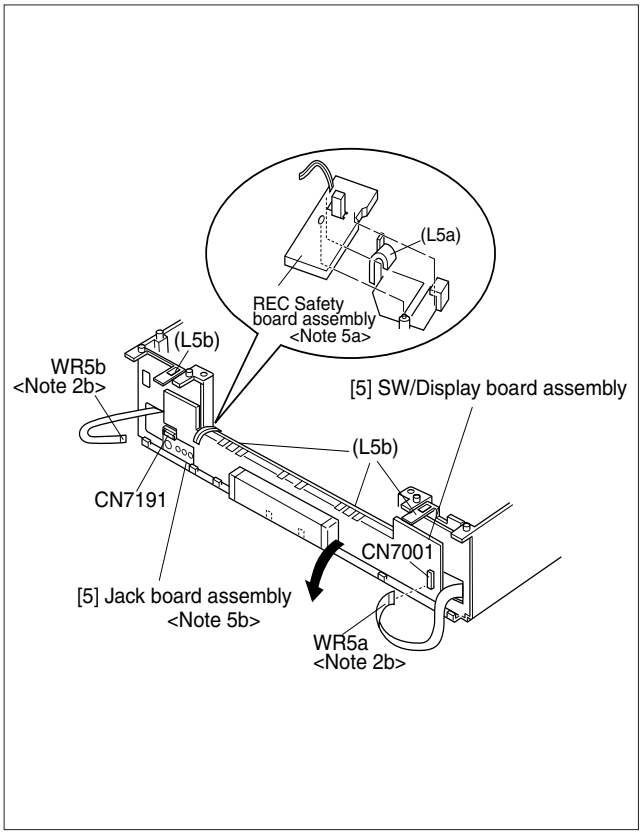


Fig. D5

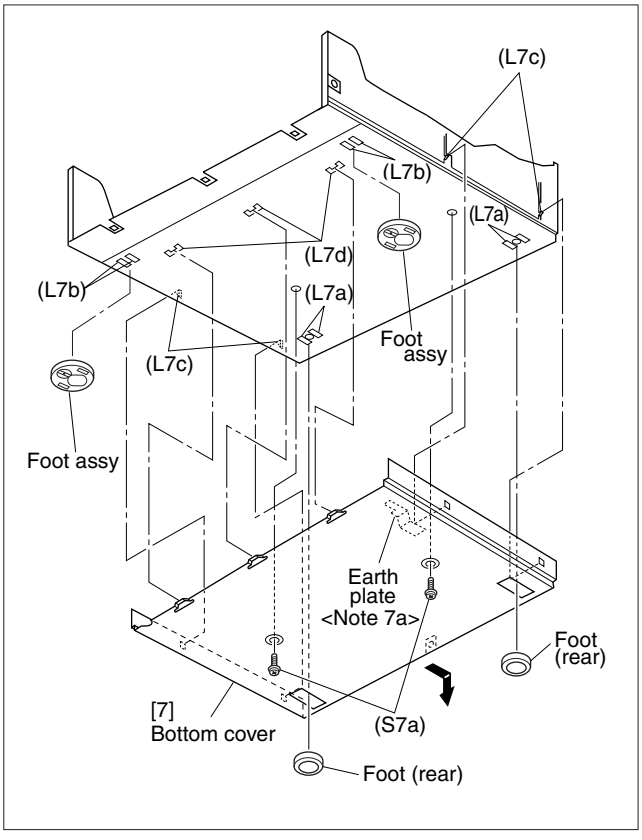


Fig. D7

1.4 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

1.4.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Drum assembly.
(2) Lower the cassette holder to prepare for the removal of the Mechanism assembly screws. (Refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(3) Remove the combined Mechanism and Main board assemblies.
(4) If any other major parts are used, remove them also.
(5) Connect the wires and connectors of the major parts that have been removed in steps (1) to (4). (Refer to Fig.1-4-1a.)
(6) Place the combined Mechanism, Main board and other board assemblies upside down.
(7) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

Notes:

- ***Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.***
- ***For the disassembly procedure of the major parts and details of the precautions to be taken, see "1.3 Disassembly/assembly method".***
- ***If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).***
- ***When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.***
- ***In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.***

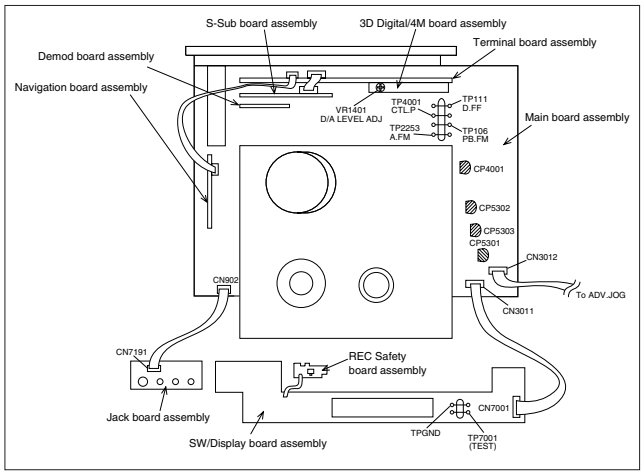


Fig. 1-4-1a

1.4.2 Precautions for cassette loading in the "Service position"

The REC safety board assembly detects cassette loading as well as cassette tabs. Therefore, after the assembly has been removed in the "Service position", it is required to set the switch manually on the REC safety board assembly when a cassette is loaded.

1.4.3 Cassette loading and ejection methods in the "Service position".

(1) Insert a cassette halfway in the Cassette holder assembly.
(2) Set the switch on the REC safety board assembly to on (by pressing the switch).
(3) As soon as the cassette starts to be loaded, set the switch on the REC safety board assembly to off (by releasing the switch).
(4) Now the desired operation (recording, playback, fast forward, rewind, etc.) is possible in this status.
(5) The switch on the REC safety board assembly does not have to be operated when ejecting a tape. But be sure to turn the set to the normal position before ejecting the tape.

Note:

- ***In the "Service position", the cassette tabs cannot be detected and recording becomes possible even with a cassette with broken tabs such as the alignment tape. Be very careful not to erase important tapes.***

1.5 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

1.5.1 How to set the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.
(2) Connect TPGND and TP7001(TEST) on the board assembly with a jump wire. (Refer to Fig. 1-4-1a.)
(3) Insert the power cord plug into the power outlet.
(4) With lock levers (A) (B) on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A) (B), refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
(5) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

1.6 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

1) User RCU mode : Ordinary mode for use by the user.
2) Jig RCU mode : Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed. These modes can be set by the operations described below.

1.6.1 Setting the Jig RCU mode

(1) Unplug the power cord plug from the power outlet.
(2) Press and hold the "REC" and "PAUSE" buttons on the VCR simultaneously, while plugging the power cord plug into the power outlet.
When the VCR is set to the Jig RCU mode, the symbols (" : ") in the time display of the FDP are turned off.

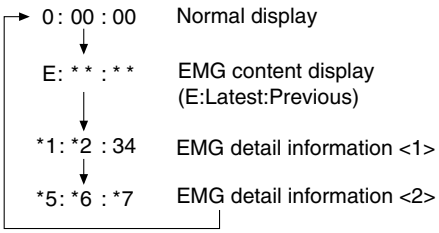
1.6.2 Setting the User RCU mode

(1) Turn off the power.
(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

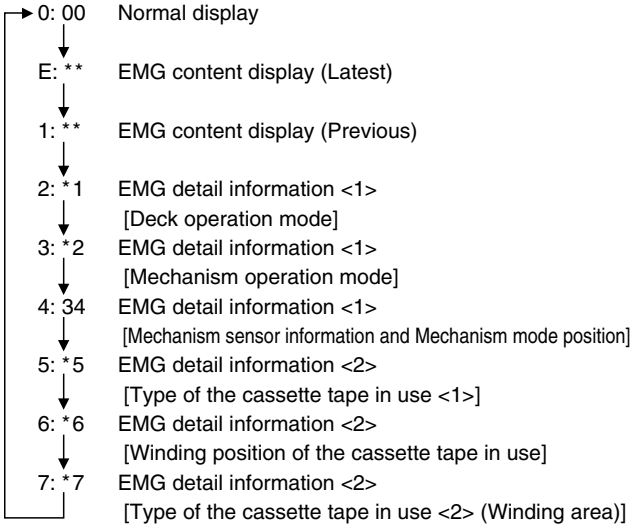
1.7 Emergency display function

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP (or OSD). With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

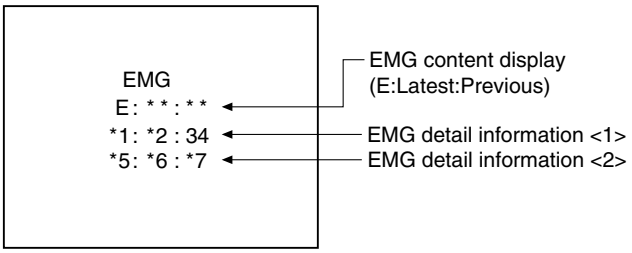
FDP display model
[FDP display]



FDP (7segment LED) display model
[FDP display]



OSD display model
[OSD display]



Notes:

- ***The EMG detail information <1><2> show the information on the latest EMG.***
  It becomes " – – : – – : – –" when there is no latest EMG record.
- ***When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).***

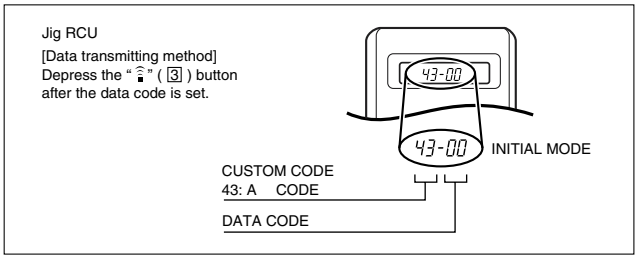


Fig. 1-7a Jig RCU [PTU94023B]

1.7.1 Displaying the EMG information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the EMG content in the form of "E: * * : * * ".

<Example 1> E : 01 : 03
Previous EMG
Latest EMG

<Example 2> E : – – : – – ← No EMG record

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the EMG detail information <1> in the form of " * 1 : * 2 : 34 ".

- * 1 : Deck operation mode at the moment of EMG
- * 2 : Mechanism operation mode at the moment of EMG
- 3– : Mechanism sensor information at the moment of EMG
- –4 : Mechanism mode position at the moment of EMG

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information <2> in the form of " * 5 : * 6 : * 7 ".

- * 5 : Type of the cassette tape in use <1> .
- * 6 : Winding position of the cassette tape in use
- * 7 : Type of the cassette tape in use <2> (Winding area)

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

Notes:

- ***For the OSD display model, all EMG information are showed by transmitting first code from the Jig RCU.***
- ***For the EMG content, see "1.7.3 EMG content description".***
- ***For the EMG detail information <1> , see "1.7.4 EMG detail information <1> ".***
- ***For the EMG detail information <2> , see "1.7.5 EMG detail information <2>".***

1.7.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the EMG display.

1.7.3 EMG content description

Note: ***EMG contents "E08/E09" are for the model with Dynamic Drum (DD).***

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the loading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. 3. Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. 2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. 3. Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. 2. The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. 3. The drum control voltage (DRUM CTL V) is not supplied to the MDA. 4. Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing. 2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. 3. The sensor/switch for detecting the end of ejection are not functioning normally. 4. The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). 5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). 2. The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. 3. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. 4. Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	1. The SW 5 V power supply circuit is shorted with GND. 2. The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	1. The absolute value sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. 4. The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	1. The FG sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. 4. The power to the sensor is not supplied. (Connection failure/soldering failure) 5. The FG pulse is not sent to the System Controller CPU. 6. The tilt motor is defective. (The soldered parts have separated.) 7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) 8. The tilt motor drive MDA - IC is defective. 9. Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. 2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. 3. The power to a reel sensor is not supplied.
EC1 or EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-7-3a

1.7.4 EMG detail information <1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information <1> .

[FDP/OSD display]

*1 : *2 : 34

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3– : Mechanism sensor information at the moment of EMG
–4 : Mechanism mode position at the moment of EMG

Note:

- ***For EMG detailed information <1>, the content of the code that is shown on the FDP (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.***

***1 : Deck operation mode**
[Common table of MN*, HD* and M3*]

Display		Deck operation mode
MN*/M3*	HD*	
00	-	Mechanism being initialized
01	00	STOP with pinch roller pressure off (or tape present with P.OFF)
02	01	STOP with pinch roller pressure on
03	-	POWER OFF as a result of EMG
04	04	PLAY
0C	0E	REC
10	11	Cassette ejected
20	22	FF
21	-	Tape fully loaded, START sensor ON, short FF
22	-	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	26	FWD SEARCH (variable speed) including x2-speed
2C	2E	INSERT REC
40	43	REW
42	-	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	47	REV SEARCH (variable speed)
4C	4C	AUDIO DUB
6C	6E	INSERT REC (VIDEO + AUDIO)
84	84	FWD STILL / SLOW
85	85	REV STILL / SLOW
8C	8F	REC PAUSE
8D	-	Back spacing
8E	-	Forward spacing (FWD transport mode with BEST function)
AC	AF	INSERT REC PAUSE
AD	-	INSERT REC back spacing
CC	CD	AUDIO DUB PAUSE
CD	-	AUDIO DUB back spacing
EC	EF	INSERT REC (VIDEO + AUDIO) PAUSE
ED	-	INSERT REC (VIDEO + AUDIO) back spacing

***2 : Mechanism operation mode**
[Common table of MN* and M3*]

Display		Mechanism operation mode
MN*	M3*	
00	00	Command standby (Status without executing command)
02	02	POWER OFF by EMG occurrence
04	04	Moving to the adjacent position in the LOAD direction
06	06	Moving to the adjacent position in the UNLOAD direction
08	08	Cassette ejection being executed / Cassette housing ejection being executed
-	0A	Mode transition to STOP with cassette ejection end
0A	0C	Cassette insertion being executed
0C	0E	Tape being loaded
0E	10	Tape being unloaded
10	12	Mode transition to STOP with pinch roller compression ON
12	14	Mode transition to STOP with pinch roller compression OFF
14	16	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	18	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	1A	Mode transition to PLAY
1A	1C	Mode transition to FWD SEARCH
1C	1E	Mode transition to REC
1E	20	Mode transition to FWD STILL / SLOW
20	22	Mode transition to REV STILL / SLOW
22	24	Mode transition to REV SEARCH
24	26	Mode transition from FF / REW to STOP
26	28	Mode transition to FF
28	2A	Mode transition to REW
2A	2C	4 sec. of REV as a result of END sensor going ON during loading
2C	2E	Short FF / REV as a result of END sensor going ON during unloading
2E	30	Mechanism position being corrected due to overrun
80	80	Mechanism in initial position (Dummy command)

[Table of HD*]

Display	Mechanism operation mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

3– : Mechanism sensor information
[Common table of MN*, HD* and M3*]

Display	Mechanism sensor information				
	MN* / HD* S-VHS SW	M3* CASS SW	REC safety SW	Start sensor	End sensor
0-	VHS	Cassette insertion	Tab broken	ON	ON
1-	VHS	Cassette insertion	Tab broken	ON	OFF
2-	VHS	Cassette insertion	Tab broken	OFF	ON
3-	VHS	Cassette insertion	Tab broken	OFF	OFF
4-	VHS	Cassette insertion	Tab present	ON	ON
5-	VHS	Cassette insertion	Tab present	ON	OFF
6-	VHS	Cassette insertion	Tab present	OFF	ON
7-	VHS	Cassette insertion	Tab present	OFF	OFF
8-	S-VHS	Cassette ejection	Tab broken	ON	ON
9-	S-VHS	Cassette ejection	Tab broken	ON	OFF
A-	S-VHS	Cassette ejection	Tab broken	OFF	ON
B-	S-VHS	Cassette ejection	Tab broken	OFF	OFF
C-	S-VHS	Cassette ejection	Tab present	ON	ON
D-	S-VHS	Cassette ejection	Tab present	ON	OFF
E-	S-VHS	Cassette ejection	Tab present	OFF	ON
F-	S-VHS	Cassette ejection	Tab present	OFF	OFF

–4 : Mechanism mode position
[Common table of MN*, HD* and M3*]

Display			Mechanism mode position
MN*	HD*	M3*	
-0	-7	-	Initial value
-1	-0	-	EJECT position
-	-	-0	EJECT position (Cassette housing drive mode)
-2	-7	-	Housing operating
-	-	-1	Between EJECT and U / L STOP
-3	-1	-2	U / L STOP position
-	-	-3	Guide arm drive position
-4	-7	-4	Tape being loaded / unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	-2	-5	Tape being loaded / unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	-7	-6	Pole base compressed position
-7	-3	-F	FF / REW position
-8	-7	-F	Between FF / REW and STOP with pinch roller compression ON
-9	-4	-F	STOP with pinch roller compression OFF
-A	-7	-E	Between STOP with pinch roller compression OFF and REV
-B	-5	-	REV (REV STILL / SLOW) position
-	-	-D	REV position
-	-	-C	Between REV and REV STILL / SLOW
-	-	-B	REV STILL / SLOW position
-C	-7	-	Between REV and FWD
-	-	-A	Between REV STILL / SLOW and FWD STILL / SLOW
-D	-6	-	FWD (FWD STILL / SLOW) position
-	-	-9	FWD STILL / SLOW position
-E	-7	-	Between FWD and PLAY
-	-	-8	Between FWD STILL / SLOW and PLAY
-F	-6	-7	PLAY position

Note:
- ***In the case of the "HD*" microprocessor, as the display is always "-7" at any intermediate position between modes, the position of transitory EMG may sometimes not be located.***

1.7.5 EMG detail information <2>

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

[FDP/OSD display]

*5 : *6 : *7

*5 : Type of the cassette tape in use <1>
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use <2> (Winding area)

Note:
- ***EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

***5 : Cassette tape type <1>**

Display	Cassette tape type <1>
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Notes:
- ***Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

***6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from “00” to “15”.

“00” : End of winding
“15” : Beginning of winding
“FF or ––” : Tape position not identified

***7 : Cassette tape type <2> (Winding area)**

Display	Cassette tape type <2>	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80 / DF-160
17 - 1A	Small reel, thick tape	T-90 / DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120 / DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180 / DF-360
22 - 24	Small reel, thin tape	T-210 / DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

Note:
- ***The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.***

1.8 Servicing the video navigation function

The video navigation function built into this unit works by storing the video navigation data in the internal Flash memory and writing data in the cassette tape simultaneously.
Therefore, the Flash memory and the cassette tape (self- recorded tape) form a related pair. If the Flash memory or the board assembly (in which the Flash memory is included) is replaced, the video navigation function will not operate. In this case, it is required to copy the video navigation data in the original Flash memory into the Flash memory of the unit which the navigation function is available.

1.8.1 Copying the video navigation data

Notes:

- **When copying the video navigation data, initialization of the Flash memory of the master unit is required.**
- **Connect the JLIP cable to each "JLIP terminal" of the VCR.**
  JLIP Cable (Parts No. : QAM0129-001 or PEAC0453)

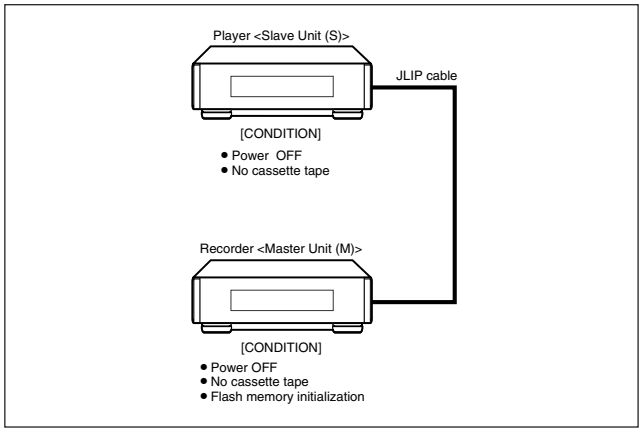


Fig. 1-8-1a Connection diagram

(1) Set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).
(2) Turn off the power of the 2 units (slave and master) VCR and set it without a cassette tape.
(3) Press the "PLAY" button of the slave unit for 7 seconds. When the copy mode is set, "1" will be displayed on the FDP. (To cancel the copy mode, press the "PLAY" button of the slave unit.)

FDP : [1] (S)

(4) Press the "PAUSE" button of the master unit for 7 seconds. When the copy mode is set, "2" will be displayed on the FDP. (To cancel the copy mode, press the "PAUSE" button of the master unit.)

FDP : [2] (M)

(5) Press the "STOP" button of the master unit.
When copying is started,"3" will be displayed on the FDP and when copying is completed the FDP display changes from "3" to "4" .
When an error occurs during the copying process, "5" will be displayed on the FDP. During such an occurrence the slave unit FDP display is "1" .

FDP : [1] (S)

FDP : [3] (M)
<Completed>
FDP : [4] (M)
<Error>
FDP : [5] (M)

(6) Press the"STOP" button of the master unit.
The copy mode of the master and slave unit will be cancelled simultaneously.

1.8.2 Erasing the video navigation data (Initialization)

This is the service mode to erase all the video navigation data inside the Flash memory. When a unit is replaced or after an operations check, erase the data which is not required while observing the TV screen.

Notes:

- **During Flash memory initialization, the transmission of the Jig code may affect the peripheral VCR. Therefore, when initializing the Flash memory, be sure to unplug the peripheral VCR power cable.**
- **Please take note that after erasing data cannot be restored, therefore care must be exercised.**
- **When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).**

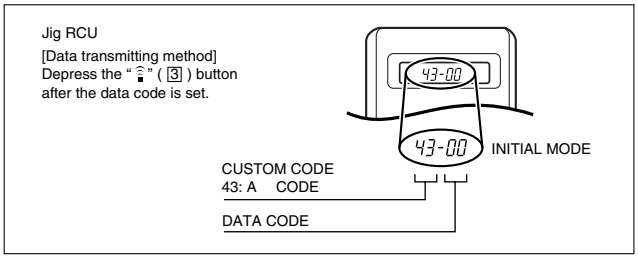


Fig. 1-8-2a Jig RCU [PTU94023B]

(1) Turn on the power.
(2) Transmit the code “FC” from the Jig RCU.
Then the “Flash memory utilities” screen is displayed. (See Fig. 1-8-2c.)
(3) Transmit the code “21” from the Jig RCU.
Select “1.Erase” then erase starts. During erase “Please wait” is displayed and when erase is completed “Erased” will be displayed. (See Fig. 1-8-2d and Fig. 1-8-2e.)
(4) Transmit the code “23” from the Jig RCU, then the mode is cancelled. (See Fig. 1-8-2b.)

Fig. 1-8-2b

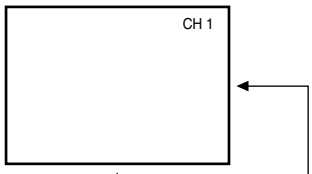


Fig. 1-8-2c

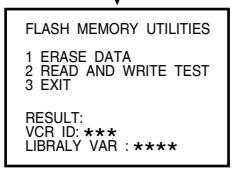


Fig. 1-8-2d

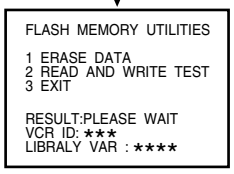
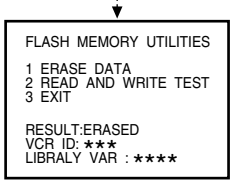


Fig. 1-8-2e



1.8.3 Factory setting level during shipment

After shipment from the factory, this is the service mode to return the rewritten EEPROM data to the factory setting level (Factory reset).

Note:

- **When this operation is executed, all user's setting contents will return to the factory setting level, therefore care must be exercised.**

(1) Insert a cassette tape.
(2) Transmit the code “6F” from the Jig RCU.
(3) After a setting is completed, the cassette tape is automatically ejected.

JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF JVC AMERICAS CORP.

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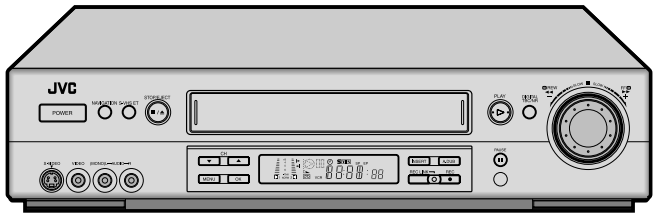
SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S9800U



S-VHS Hi-Fi

VCR Plus+ 3 CABLE BOX CONTROL

Super VHS ET

TIME SCAN

Ghost Reduction Tuner

SPECIFICATIONS

GENERAL

Power requirement	: AC 120 V~ , 60 Hz
Power consumption	
Power on	: 27 W
Power off	: 2.6 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: –20°C to 60°C (–4°F to140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 437 mm x 97 mm x 347 mm (17-1/4" x 3-7/8" x 13-11/16")
Weight	: 4.8 kg (10.6 lbs)
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	
VHS	: 230 lines
S-VHS	: 400 lines
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) S-video connectors (IN x 2, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2–13
UHF	: Channels 14–69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 Ω, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs
Memory backup time	: Approx. 3 min.

ACCESSORIES

Provided accessories	: Infrared remote control unit, "AA" battery x 2, Audio/video cable, RF cable (F-type), S-video cable (4-pin), S-VHS ET labels, Controller

Specifications shown are for SP mode unless specified otherwise.
E. & O.E. Design and specifications subject to change without notice.

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No. 82805
June 2000

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

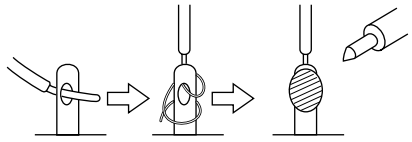


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

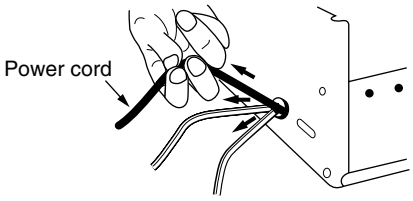


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.
    Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.
    Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) Connector part number : E03830-001
    2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
    3) Replacement procedure
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

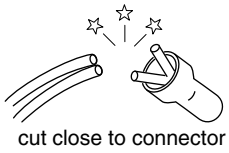


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

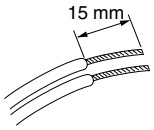


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

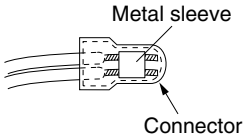


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

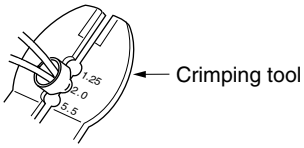


Fig.6

(5) Check the four points noted in Fig.7.

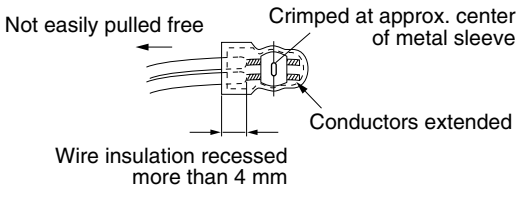

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

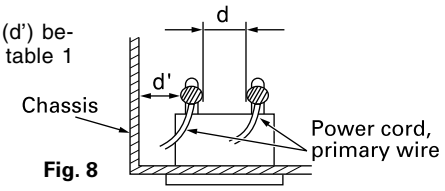


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

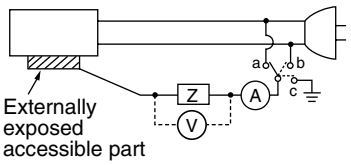


Fig. 9

5. Grounding (Class Ⅰ model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

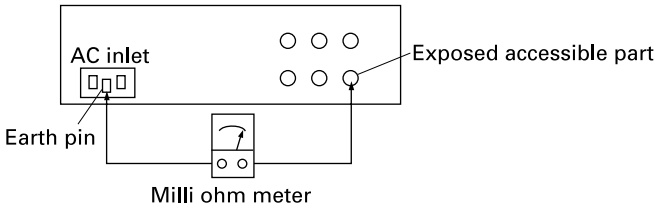


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

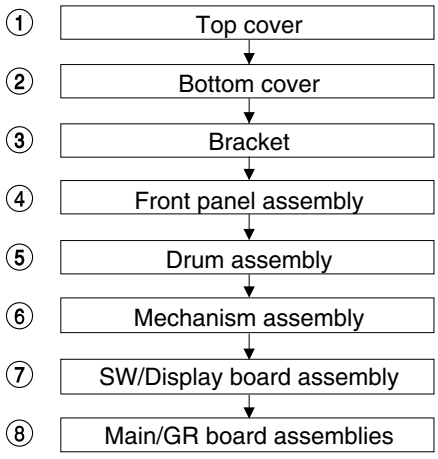
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	Top cover	D1	4(S1)	
②	Bottom cover	D2	(S2a), 2(S2b), 3(L2a), 4(L2b)	<NOTE 2>
			EARTH PLATE	
③	Bracket	D3	2(S3)	

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig.No. showing procedure or part location
(4) Identification of part to be removed,unhooked,unlocked, released,unpluged,unclamped or unsoldered.
P = Spring, W = Washer, S = Screw, L = Locking tab, CNxx(WRxx) = Remove the wire (WRxx) from the connector (CNxx).

Note:

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	Top cover	D1	4(S1)	
②	Bottom cover	D2	(S2a), 2(S2b), 3(L2a), 4(L2b)	<NOTE 2>
			EARTH PLATE	
③	Bracket	D3	2(S3)	
④	Front panel assembly	D4	9(L4a), CN901(WR4a), CN902(WR4b), CN3012(WR4c)	<NOTE 4a> <NOTE 4b>
			2(S4), 2(L4b), JACK board assy	
⑤	Drum assembly	D5	3(S5), 4(L5a), (L5b), (P5), CON1(WR5a), CN1(WR5b)	<NOTE 4a>
			Inertia plate, Roller arm assy	
⑥	Mechanism assembly	D6	2(S6a), 2(S6b), 2(L6), CN1(WR6)	<NOTE 4a> <NOTE 6a> <NOTE 6b>
⑦	SW/Display board assembly	D7	CN7001(WR7), (L7a), REC safety board assy, 4(L7b), 4(L7c)	<NOTE 4a> <NOTE 7>
⑧	Main board assembly	D8	2(S8a), (S8b)	
	GR board assembly		(S8c), (L8)	<NOTE4a>

<NOTE2>

- When attaching the Bottom cover, make sure that the earth plate of the Bottom cover is passed through the hole of the Bottom chassis and then touches the GND (Ground) on the Main board assembly.

<NOTE4a>

- Be careful not to damage the connector and wire etc. during connection and disconnection.
When connecting the wire to the connector, be careful with the wire direction.

<NOTE4b>

- When reattaching the Front panel assembly, make sure that the door opener ⓐ of the Cassette holder assembly is lowered in position prior to the reinstallation.

<NOTE6a>

- When it is required to remove the screws (S6a) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors on the Main board assembly (D3001: LED, Q3002: Start sensor, Q3003: End sensor, S3002 : S cassette switch).

<NOTE6b>

- The wire (WR6) has excess length that may be loose, as it is quite long. After inserting the wire and connectors, the loose portion of the wire should be taken up and accommodated between the A/C head base and the main deck.

<NOTE7>

- The REC safety board assembly is attached to the SW/Display board assembly. It is therefore necessary to remove the REC safety board assembly before removing the SW/Display board assembly.

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

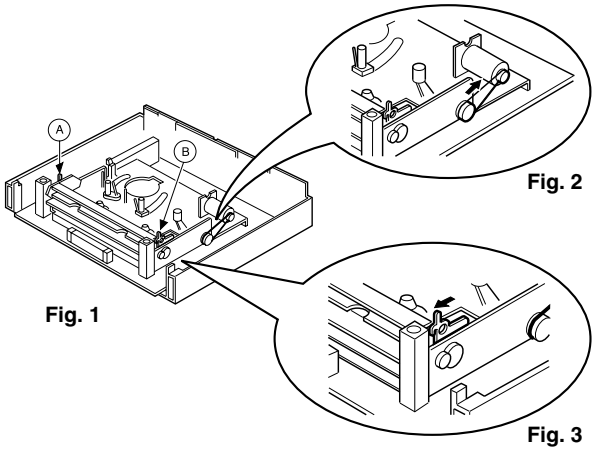


Fig. 1

Fig. 2

Fig. 3

Turn the loading motor pulley in the direction as indicated by Fig.2. As both Ⓐ and Ⓑ levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of Ⓐ, Ⓑ, Ⓑ, Ⓐ. When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

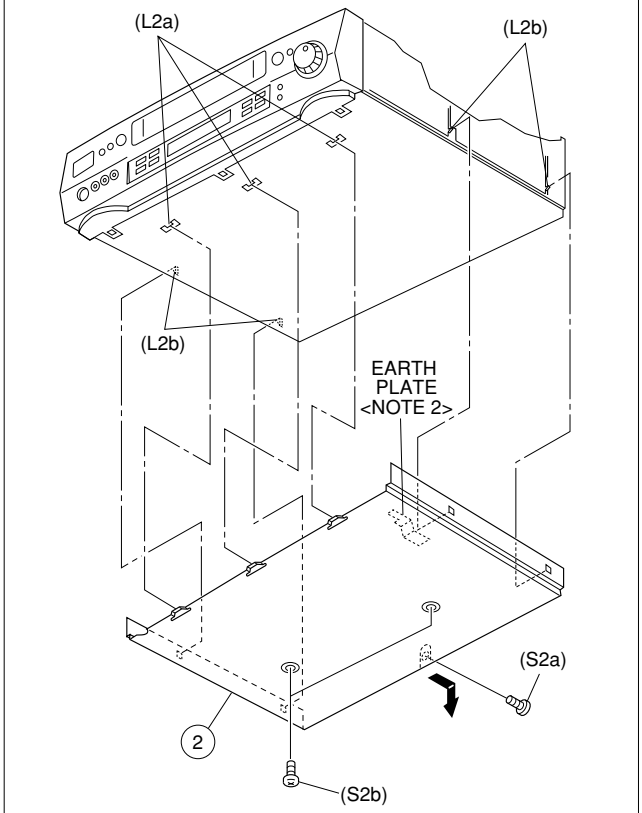


Fig. D2

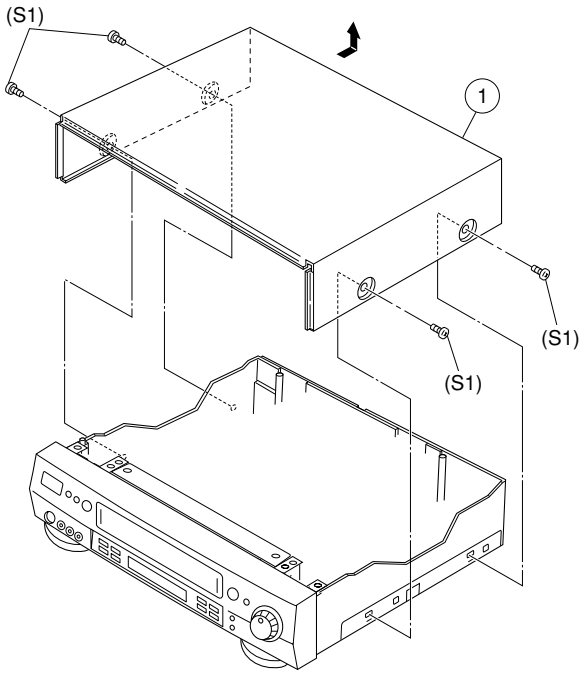


Fig. D1

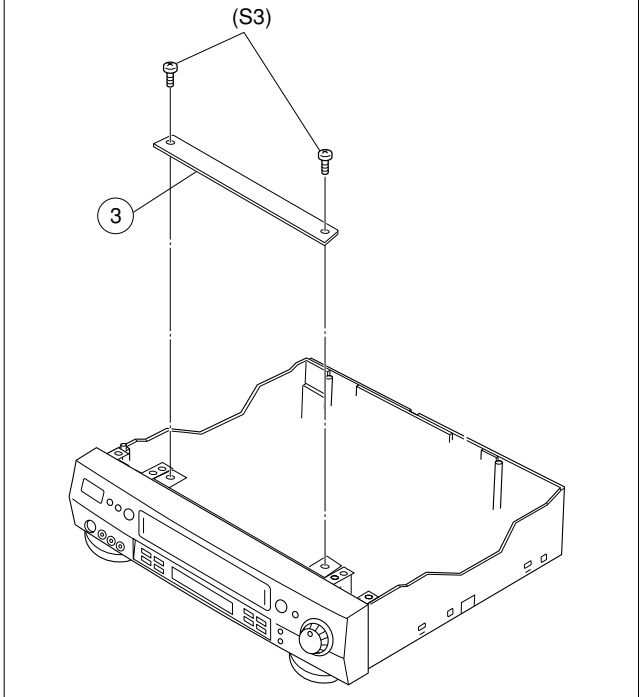


Fig. D3

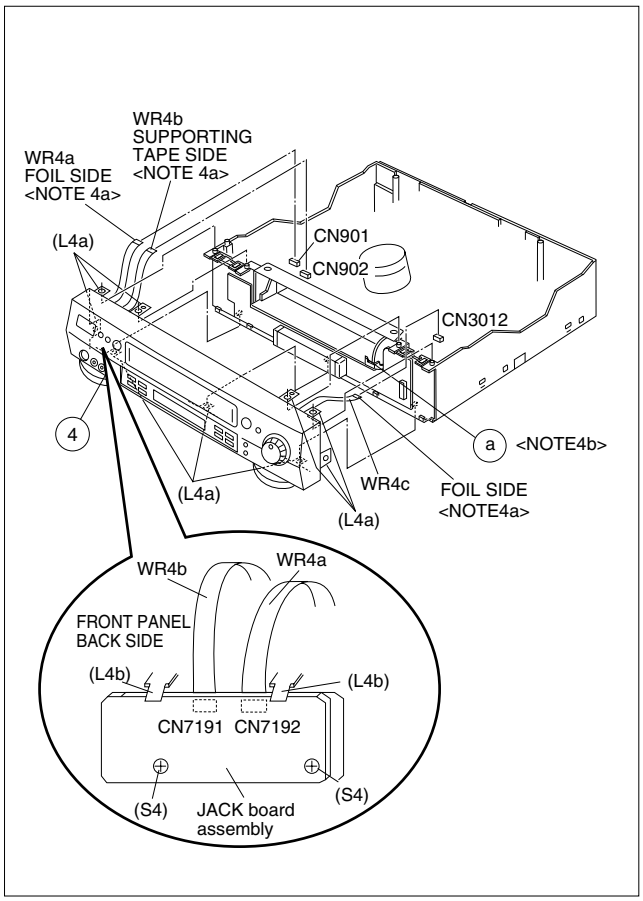


Fig. D4

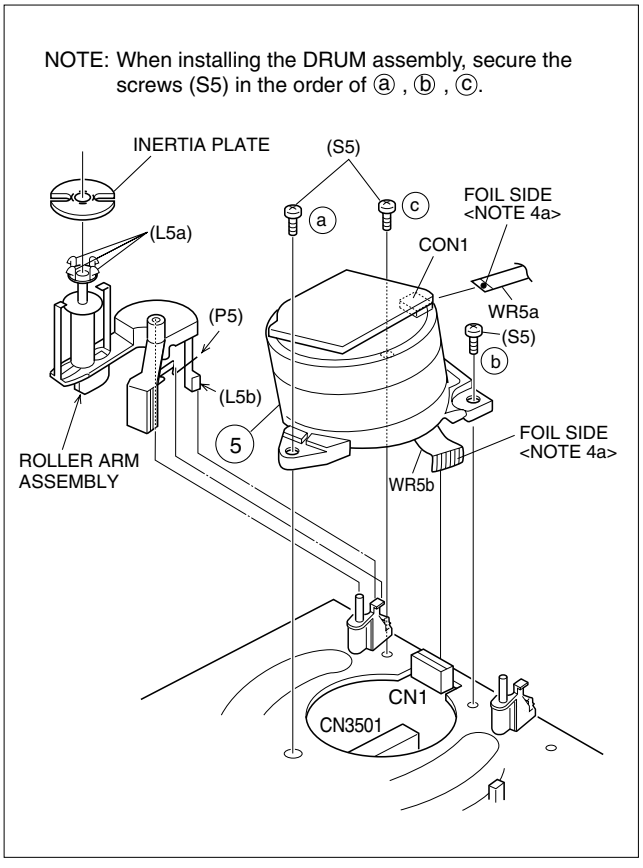


Fig. D5

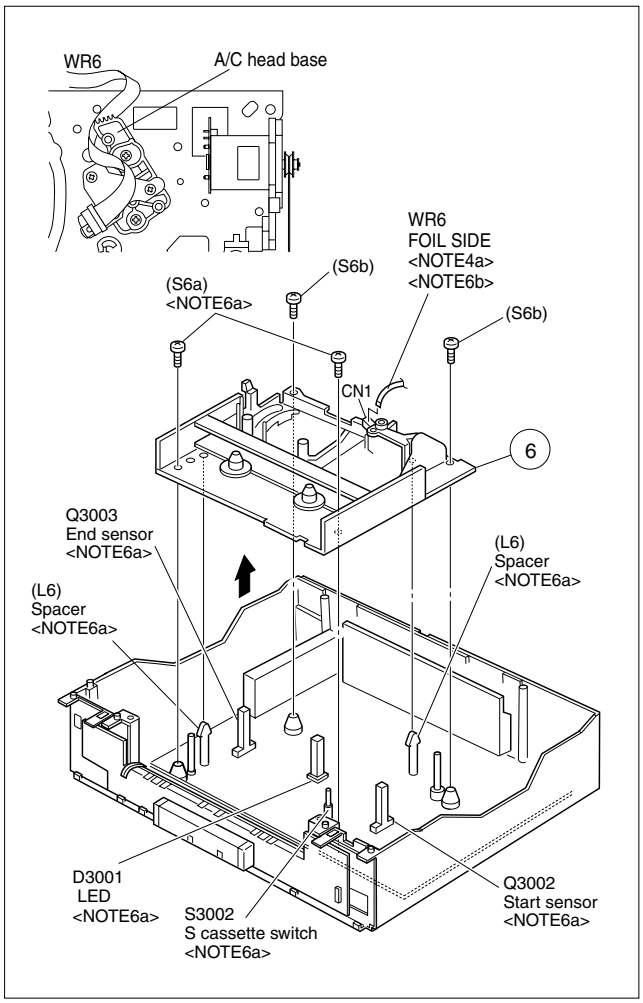


Fig. D6

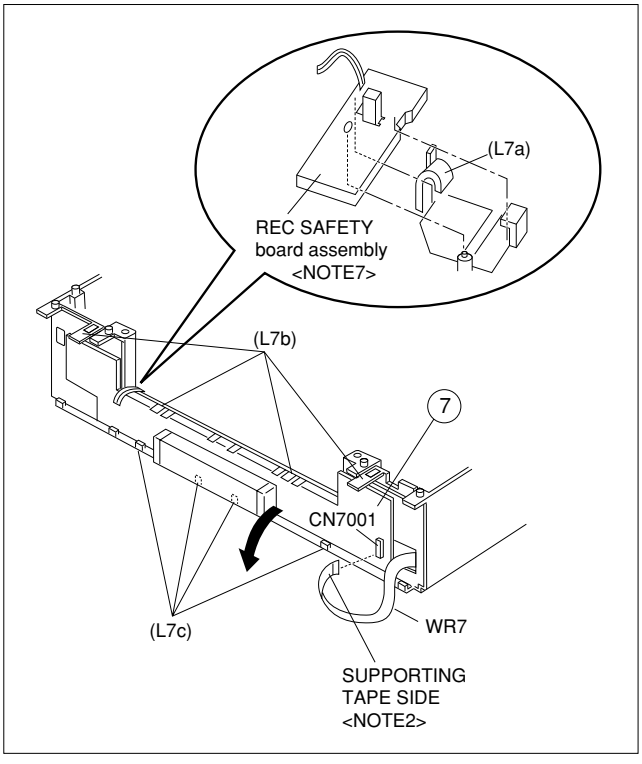


Fig. D7

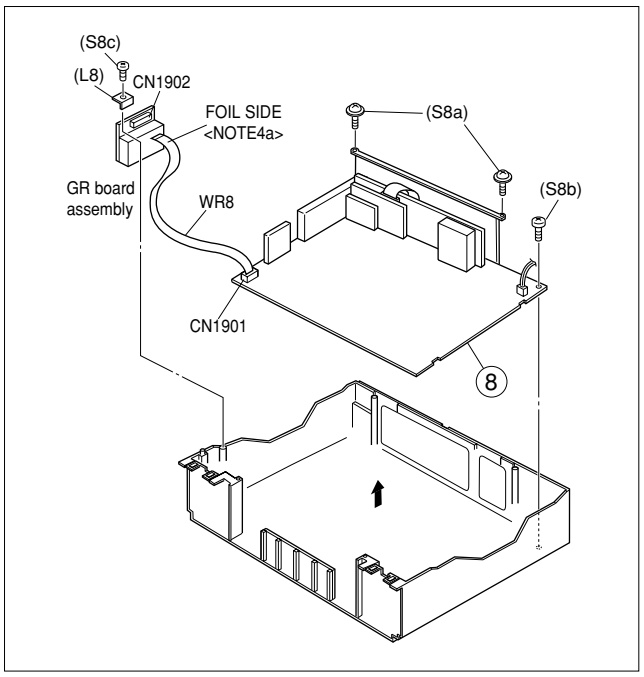


Fig. D8

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Mechanism assembly, this unit is constructed so as to allow the Mechanism and Main board assemblies to be removed together from the Bottom chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

(1) Remove the Top cover, Bracket, Front panel assembly and JACK board assembly. (Refer to 1.3 DISASSEMBLY/ ASSEMBLY METHOD.)
(2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Mechanism assembly. (Refer to the “Procedures for Lowering the Cassette holder assembly” on page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(3) Take out 2 screws Ⓐ and 2 screws Ⓑ as shown in Fig. 1-4-1.
(4) Remove the flat wires from CN3011 and CN1901 on the Main board assembly.

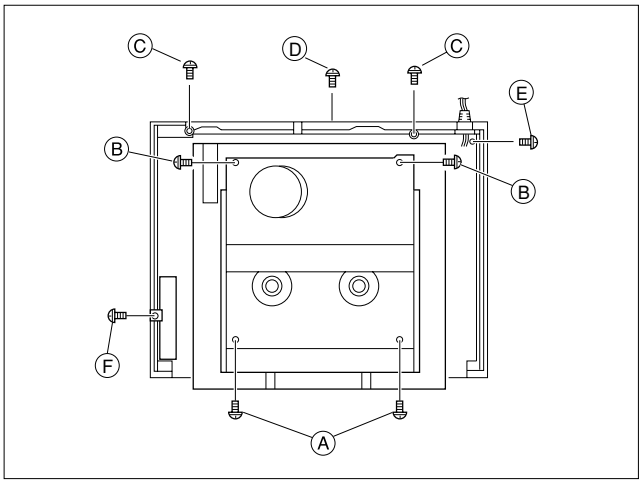


Fig. 1-4-1

(5) Take out 2 screws Ⓒ, 1 screw Ⓓ and 1 screw Ⓔ as shown in Fig. 1-4-1.
(6) Take out 1 screw Ⓕ as shown in Fig. 1-4-1, and remove the GR board assembly. (Take care not to pull the flat wire (Fig. D8) from CN1902.)
(7) Remove the Main board and Mechanism assemblies together while holding the edge of the Main board assembly. At this stage be careful of the power cord and prongs of the jacks on the back side. (Refer to Fig. 1-4-2.)
(8) Remove the SW/Display board assembly and REC safety board assembly. (Refer to page 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD. Take care not to pull the flat wire (Fig. D7) from CN7001.)

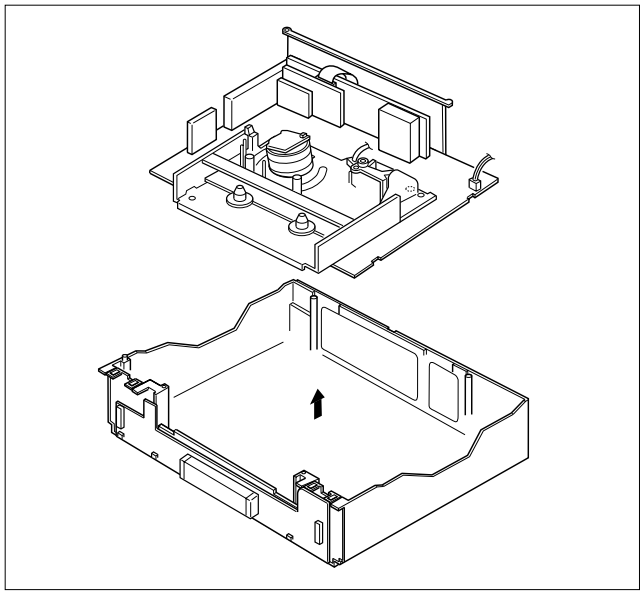


Fig. 1-4-2

(9) Place the SW/Display board assembly, REC safety board assembly, JACK board assembly and GR board assembly on the front side and left side of the Mechanism and Main board assemblies which was removed at the step (7), then connect the flat wires into CN3011, CN1901, CN901 and CN902 of the Main board assembly. (Refer to Fig. 1-4-3.)

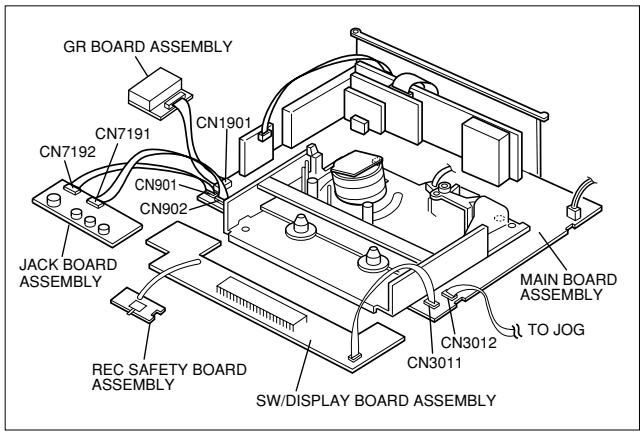


Fig. 1-4-3

(10) Connect the power cord to the wall socket, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)

Note:

- ***When carrying out diagnosis and repair of the Main board assembly in the service position, be sure to ground both the Main board and the Mechanism assemblies.***
  If they are improperly grounded, there may be noise on the playback picture or the FDP counter display may move even when the mechanism is kept in an inoperative status.

1.4.2 Precautions for cassette loading in the "SERVICE POSITION"

The REC safety board assembly detects cassette loading as well as cassette tabs. Therefore, after the assembly has been removed in the "SERVICE POSITION", it is required to set the switch manually on the REC safety board assembly when a cassette is loaded.

1.4.3 Cassette loading and ejection methods in the "SERVICE POSITION"(See Fig. 1-4-3).

(1) Insert a cassette halfway in the Cassette holder assembly.
(2) Set the switch on the REC safety board assembly to ON (by pressing the switch).
(3) As soon as the cassette starts to be loaded, set the switch on the REC safety board assembly to OFF (by releasing the switch).
(4) Now the desired operation (recording, playback, fast forward, rewind, etc.) is possible in this status (the status shown in Fig.1-4-3).

Notes:

- ***When performing diagnostics of the tape playback or the recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode when performing diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position (the status shown in Fig.1-4-3).***
- ***In the "SERVICE POSITION", the cassette tabs cannot be detected and recording becomes possible even with a cassette with broken tabs such as the alignment tape. Be very careful not to erase important tapes.***

(5) The switch on the REC safety board assembly does not have to be operated when ejecting a tape. But be sure to turn the set to the normal position before ejecting the tape.

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Connect TPGND and TP7001 (TEST) on the SW/Display board assembly with a jump wire.
(3) Connect VCR to AC.
(4) Press the POWER button.
(5) With lock levers ⒶⒷ on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers ⒶⒷ , refer to the "Procedures for Lowering the Cassette holder assembly" on page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

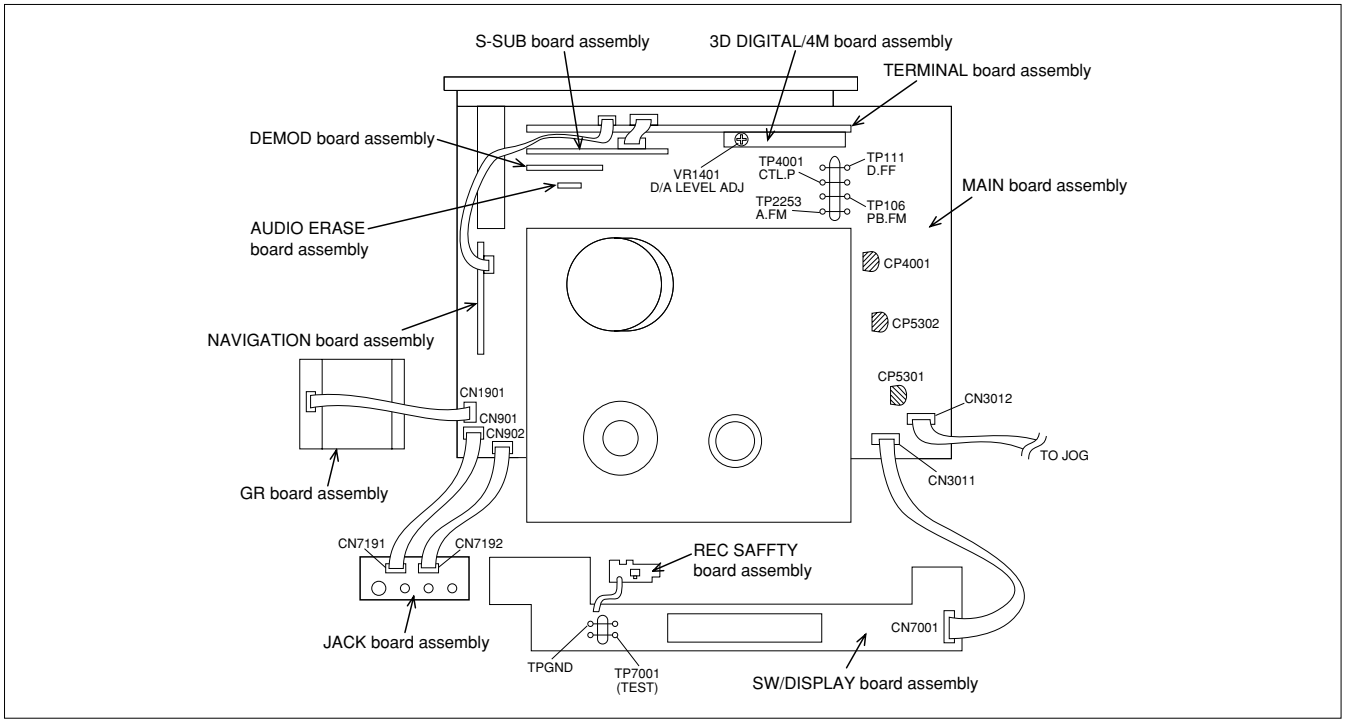
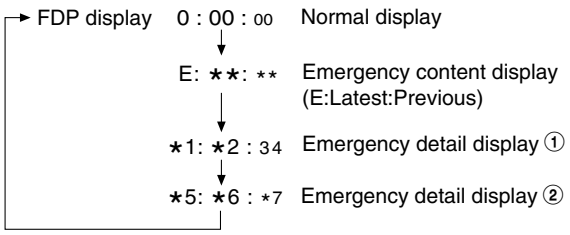


Fig. 1-5-1

1.6 EMERGENCY DISPLAY FUNCTION

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP. With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

FDP display switching



Notes:

- ***The emergency detail display ① ② show the information on the latest emergency.***
  It becomes " – – : – – : – –" when there is no latest emergency record.
- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

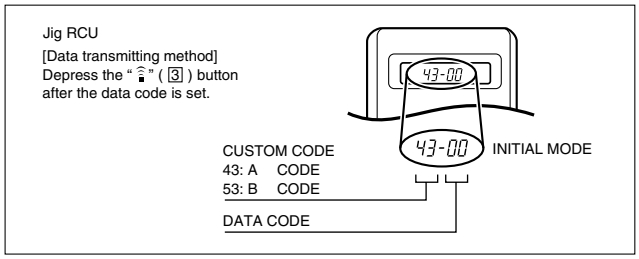
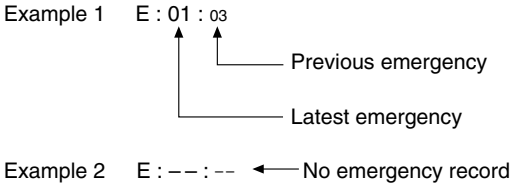


Fig. 1-6-1 Jig RCU [PTU94023B]

1.6.1 Displaying the emergency information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the emergency content in the form of "E:★★:★★".



Note:

- ***For the emergency content, see "1.6.3 Emergency content description".***

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the emergency detail information ① in the form of "★1 : ★2 : 34".

★1 : Deck operation mode at the moment of emergency
★2 : Mechanism operation mode at the moment of emergency
3– : Mechanism sensor information at the moment of emergency
–4 : Mechanism mode position at the moment of emergency

Note:

- ***For the emergency detail information 1 , see "1.6.4 Emergency detail information ①".***

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the emergency detail information ② in the form of "★5 : ★6 : ★7".

★5 : Type of the cassette tape in use ①.
★6 : Winding position of the cassette tape in use
★7 : Type of the cassette tape in use ② (Winding area)

Note:

- **For the emergency detail information ② , see "1.6.5 Emergency detail information ②".**

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

1.6.2 Clearing the emergency history

(1) Display the emergency history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the emergency display.

(Y292-02e)

1.6.3 Emergency content description

Note: ***Emergency contents "E08/E09" are for the model with Dynamic Drum (DD).***

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the loading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	① The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. ② The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. ③ Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	① The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. ② The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. ③ The drum control voltage (DRUM CTL V) is not supplied to the MDA. ④ Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	① The cassette cannot be ejected due to a failure in the drive mechanism of the housing. ② When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. ③ The sensor/switch for detecting the end of ejection are not functioning normally. ④ The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). ⑤ When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	① The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). ② The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. ③ The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. ④ Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	① The SW 5 V power supply circuit is shorted with GND. ② The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	① The absolute value sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. ④ The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	① The FG sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. ④ The power to the sensor is not supplied. (Connection failure/soldering failure) ⑤ The FG pulse is not sent to the System Controller CPU. ⑥ The tilt motor is defective. (The soldered parts have separated.) ⑦ The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) ⑧ The tilt motor drive MDA - IC is defective. ⑨ Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	① The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. ② The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. ③ The power to a reel sensor is not supplied.
EC1 or EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-6-1

1.6.4 Emergency detail information ①

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest emergency can be confirmed based on the figure in EMG detail information ①.

[FDP display]

∗1 : ∗2 : 34

∗1 : Deck operation mode at the moment of emergency
∗2 : Mechanism operation mode at the moment of emergency
3– : Mechanism sensor information at the moment of emergency
–4 : Mechanism mode position at the moment of emergency

Note:

- ***In the Deck operation mode/Mechanism operation mode/ Mechanism mode position, the contents of the code that is shown on the FDP differs depending on the parts number of the System Control microprocessor (IC3001) of the VCR.***
  For the microprocessor parts number that starts with the two letters "MN", refer to the Table of MN and for parts number with "HD", refer to the Table of HD.

∗1 : Deck Operation Mode
[Table of MN]

Display	Deck Operation Mode
00	Mechanism being initialized
01	STOP with pinch roller pressure off (or tape present with P.OFF)
02	STOP with pinch roller pressure on
03	POWER OFF as a result of EMG
04	PLAY
0C	REC
10	Cassette ejected
20	FF
21	Tape fully loaded, START sensor ON, short FF
22	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	FWD SEARCH (variable speed) including x2-speed
2C	INSERT REC
40	REW
42	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	REV SEARCH (variable speed)
4C	AUDIO DUB
6C	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8C	REC PAUSE
8D	Back spacing
8E	Forward spacing (FWD transport mode with BEST function)
AC	INSERT REC PAUSE
AD	INSERT REC Back spacing
CC	AUDIO DUB PAUSE
CD	AUDIO DUB Back spacing
EC	INSERT REC (VIDEO + AUDIO) PAUSE
ED	INSERT REC (VIDEO + AUDIO) Back spacing

[Table of HD]

Display	Deck Operation Mode
00	STOP with pinch roller pressure off (or tape present with P.OFF)
01	STOP with pinch roller pressure on
04	PLAY
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH (variable speed)
4C	AUDIO DUB
6E	INSERT REC (VIDEO+AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO+AUDIO) PAUSE

∗2 : Mechanism Operation Mode
[Table of MN]

Display	Mechanism Operation Mode
00	Command standby (Status without executing command)
02	POWER OFF by EMG occurrence
04	Moving to the adjacent position in the LOAD direction
06	Moving to the adjacent position in the UNLOAD direction
08	Cassette ejection being executed
0A	Cassette insertion being executed
0C	Tape being loaded
0E	Tape being unloaded
10	Mode transition to STOP with pinch roller compression ON
12	Mode transition to STOP with pinch roller compression OFF
14	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	Mode transition to PLAY
1A	Mode transition to FWD SEARCH
1C	Mode transition to REC
1E	Mode transition to FWD STILL/SLOW
20	Mode transition to REV STILL/SLOW
22	Mode transition to REV SEARCH
24	Mode transition from FF/REW to STOP
26	Mode transition to FF
28	Mode transition to REW
2A	4 sec. of REV as a result of END sensor going ON during loading
2C	Short FF/REV as a result of tape sensor going ON during unloading
2E	Mechanism position being corrected due to overrun
80	Mechanism in initial position (Dummy command)

[Table of HD]

Display	Mechanism Operation Mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

3– : Mechanism Sensor Information
[Common table of MN and HD]

Display	Mechanism Sensor Information			
	S-VHS SW	REC SAFETY SW	START SENSOR	END SENSOR
0–	VHS	Tab broken	ON	ON
1–	VHS	Tab broken	ON	OFF
2–	VHS	Tab broken	OFF	ON
3–	VHS	Tab broken	OFF	OFF
4–	VHS	Tab present	ON	ON
5–	VHS	Tab present	ON	OFF
6–	VHS	Tab present	OFF	ON
7–	VHS	Tab present	OFF	OFF
8–	S-VHS	Tab broken	ON	ON
9–	S-VHS	Tab broken	ON	OFF
A–	S-VHS	Tab broken	OFF	ON
B–	S-VHS	Tab broken	OFF	OFF
C–	S-VHS	Tab present	ON	ON
D–	S-VHS	Tab present	ON	OFF
E–	S-VHS	Tab present	OFF	ON
F–	S-VHS	Tab present	OFF	OFF

–4 : Mechanism Mode Position
[Table of MN]

Display	Mechanism Mode Position
-0	Initial value
-1	EJECT position
-2	Housing operating
-3	U/L STOP position
-4	Tape being loaded/unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	Tape being loaded/unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	Pole base compressed position
-7	FF/REW position
-8	Between FF/REW and STOP with pinch roller compression ON
-9	STOP with pinch roller compression OFF
-A	Between STOP with pinch roller compression OFF and REV
-B	REV (REV STILL/SLOW) position
-C	Between REV and FWD
-D	FWD (FWD STILL/SLOW) position
-E	Between FWD and PLAY
-F	PLAY position

[Table of HD]

Display	Mechanism Mode Position
–0	EJECT position
–1	U/L STOP position
–2	Tape being loaded/unloaded (When the pole base is located on the rear side of the position just beside the drum)
–3	FF/REW position
–4	STOP with pinch roller pressure off
–5	REV (REV STILL/SLOW) position
–6	FWD (FWD STILL/SLOW) position, PLAY position
–7	Intermediate position during transition between other mechanism modes

Note:

- ***As the display is always "–7" at any intermediate position between mechanism modes, the position of transitory EMG may sometimes not be locatable.***

1.6.5 Emergency detail information ②

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information ②.

[FDP display]

★5 : ★6 : ★7

★5 : Type of the cassette tape in use ①
★6 : Winding position of the cassette tape in use
★7 : Type of the cassette tape in use ② (Winding area)

Note:

- ***EMG detail information ② is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

★5 : Cassette tape type ①

Display	Cassette Tape Type ①
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Notes:

- ***Cassette tape type ① is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

★6 : Cassette tape winding position

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from "00" to "15".

"00" : End of winding
"15" : Beginning of winding
"FF" : Tape position not identified

★7 : Cassette tape type ② (Winding area)

Display	Cassette Tape Type ②	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80/DF-160
17 - 1A	Small reel, thick tape	T-80/DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120/DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180/DF-380
22 - 24	Small reel, thin tape	T-210/DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

Note:

- ***The values of cassette tape type ② in the above table are typical values with representative cassette tapes.***

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001) 1/2

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+) SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-) SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	IN	CTL PULSE FEEDBACK
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	NORM/MESEC/S	IN	SVHS MODE:H
12	SECAM_DET(H)/KILLER_DET	-	NC
13	VIDEO_ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
14	START_SENSOR	IN	START SENSOR
15	END_SENSOR	IN	END SENSOR
16	IND(L)	IN	AUDIO INPUT (LCH) FOR THE FDP AUDIO INDICATOR
17	DD_ABS	IN	DYNAMIC DRUM POSITION DETECT
18	SCR_ID	-	NC
19	IND(R)	IN	AUDIO INPUT (RCH) FOR THE FDP AUDIO INDICATOR
20	BS_ANT/AFC	IN	TUNING CLOCK
21	LED/RF AGC	-	NC
22	A.ENV/ND(L)	IN	AUDIO PB FM ENV.INPUT/NON HiFi MODE:L
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL_GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	LSA	IN	MECHANISM MODE DETECT(A)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	CAP_REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	LOCK(L)/P.SAVE[0.1]	IN	TUNING PLL LOCK DETECT:L
31	P50_IN	-	NC
32	R.PAUSE/COMPU_IN	IN	REMOTE PAUSE CONTROL / A/V COMPULINK INPUT
33	RAE_OUT/COMPUOUT	OUT	NC / A/V COMPULINK OUTPUT
34	P50_OUT	-	NC
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	LMC3	OUT	LOADING MOTOR DRIVE(3)
38	SB_G(PWM)	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
39	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
40	POWER_DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
41	REC_SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
42	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
43	VSS	-	GND
44	RMO	OUT	REMOTE CONTROL OUTPUT FOR CABLE BOX
45	VCC	-	SYSTEM POWER
46	EXP2_DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR TUNER/REG CONTROL
47	EXP1_DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR AUDIO/VIDEO CONTROL
48	EXP_CLK	OUT	SERIAL DATA TRANSFER CLOCK FOR AUDIO/VIDEO AND TUNER/REG CONTROL
49	I2C_DATA_A/V	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR THE VIDEO/AUDIO IC
50	I2C_CLK_A/V	OUT	SERIAL DATA TRANSFER CLOCK FOR THE VIDEO/AUDIO IC
51	S.DATA_TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
52	S.DATA_FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP_FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	TU_FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
56	JUST_CLK/EDS(H)	OUT	NC/EDS ON:H

Table 1-7-1 SYSCON CPU pin function(1/2)

1.7.2 Syscon CPU pin function (IC3001) 2/2

PIN NO.	LABEL	IN/OUT	FUNCTION
57	TU_CE	OUT	CHIP ENABLE OF THE TUNER UNIT
58	N.REC_ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
59	DD_FG	IN	DYNAMIC DRUM FG INPUT
60	TU_CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU_DATA	OUT	TUNING DATA
62	FWE	-	NC
63	NMI(L)	-	NC
64	X2	-	TIMER CLOCK (32.768KHz)
65	X1	-	TIMER CLOCK (32.768KHz)
66	RES(L)	-	RESET TERMINAL (RESET ON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK(10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK(10MHz)
70	VCC	-	SYSTEM POWER
71	MODE	-	NC
72	TU_A_MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU_V_MUTE(H)	-	NC
74	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
75	I2C_CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C_DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	DDCFWD	OUT	DYNAMIC DRUM CONTROL (FORWARD)
78	DDCREV	OUT	DYNAMIC DRUM CONTROL (REVERSE)
79	DDSPDCTL	OUT	DYNAMIC DRUM SPEED CONTROL
80	V.P.CTL	OUT	V.PULSE CONTROL, V COMPENSATION DURING SPECIAL PLAYBACK
81	R-Y_REV/EDS_CS	OUT	NC/DIGITAL SUB (EDS) IC CHIP ENABLE
82	VCC	-	SYSTEM POWER
83	SLOW_P	OUT	MEMORY TIMING CONTROL IN THE SLOW MODE
84	VSS	-	GND
85	SP_SHORT(H)	-	NC
86	LP_SHORT(H)	-	NC
87	FLY_ON(H)	OUT	FLYING ERASE ON:H
88	H.REC_ST(H)	OUT	HIFI AUDIO SOUND RECORDING START
89	TRICK(H)/M_TRICK(L)	-	NC
90	HEAD_SEL	OUT	HEAD SELECT(EP/LP HEAD:H, SP HEAD:L)
91	OSD_CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
92	SYNC_DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
93	MESECAM(H)	-	NC
94	JSB/STLB	IN	INPUT FOR THE JOG SHUTTLE
95	SHTL(L)/JOGA	IN	INPUT FOR THE JOG SHUTTLE
96	JOGB/S_CASS(H)	IN	INPUT FOR THE JOG SHUTTLE/NC
97	JSA/STLA	IN	INPUT FOR THE JOG SHUTTLE
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	SUB_RESET	OUT	RESET SIGNAL FOR THE SUB CPU (NAVI)
104	HI_FF/REW(L)	OUT	HIGH FF/REW:L
105	SUB_BUSY	IN	SUB CPU (NAVI) BUSY
106	SUB_CS	OUT	CHIP SELECT FOR THE SUB CPU (NAVI)
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTAGE

Table 1-7-2 SYSCON CPU pin function(2/2)

1.8 SERVICING THE VIDEO NAVIGATION FUNCTION

The video navigation function is to record data to the built-in FLASH memory of the VCR. At the same time a reference number is wrote on the cassette tape for control purposes. Therefore, the FLASH memory and the cassette tape (self-recorded tape) form a related pair. If the FLASH memory or the board assembly (in which the FLASH memory is included) is replaced, the video navigation function will not operate. In this case, it is required to copy the video navigation data in the original FLASH memory into the FLASH memory of the unit which the navigation function is available.

1.8.1 Copying the video navigation data

Notes:

- ***When copying the video navigation data, initialization of the FLASH memory of the master unit is required.***
- ***Connect the JLIP cable to each "JLIP terminal" of the VCR.***
  JLIP Cable (Parts No. : QAM0129-001 or PEAC0453)

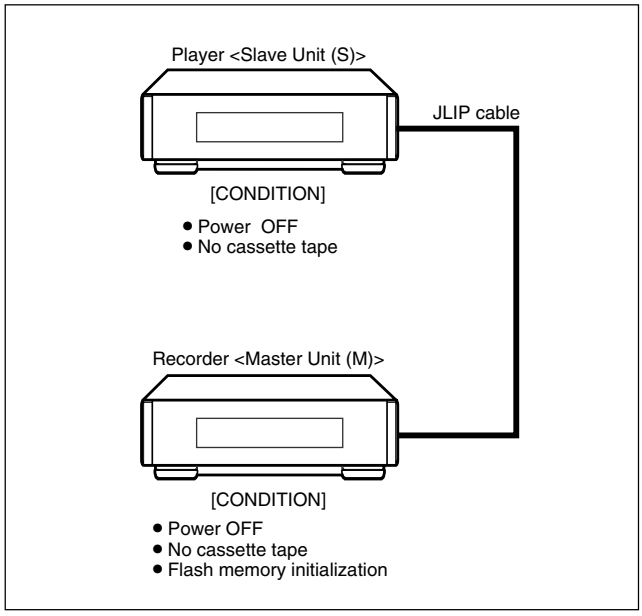


Fig. 1-8-1a Connection diagram

(1) Turn [OFF] the power of the 2 units (slave and master) VCR and set it without a cassette tape.

(2) Press the [PLAY] button of the slave unit for 7 seconds. When the copy mode is set, [1] will be displayed on the FDP.

FDP : 1 (S)

Note:

- ***To cancel the copy mode, press the [PLAY] button of the slave unit, then the copy mode of the slave unit will be cancelled.***

(3) Press the [PAUSE] button of the master unit for 7 seconds. When the copy mode is set, [2] will be displayed on the FDP.

FDP : 2 (M)

Note:

- ***To cancel the copy mode, press the [PAUSE] button of the master unit, then the copy mode of the master unit will be cancelled.***

(4) Press the [STOP] button of the master unit.
When copying is started, [3] will be displayed on the FDP and when copying is completed the FDP display changes from [3] to [4].
When an error occurs during the copying process, [5] will be displayed on the FDP. During such an occurrence the slave unit FDP display is [1].

FDP : 1 (S)

FDP : 3 (M)

<Completed>
FDP : 4 (M)

<Error>
FDP : 5 (M)

(5) Press the [STOP] button of the master unit.
The copy mode of the master and slave unit will be cancelled simultaneously.

1.8.2 Erasing the video navigation data (Initialization)

This is the service mode to erase all the video navigation data inside the FLASH memory. When a unit is replaced or after an operations check, erase the data which is not required while observing the TV screen.

Notes:

- ***During Flash memory initialization, the transmission of the jig code may affect the peripheral VCR. Therefore, when initializing the Flash memory, be sure to unplug the peripheral VCR power cable.***
- ***Please take note that after erasing data cannot be restored, therefore care must be exercised.***
- ***When using the Jig RCU. set its custom code to match the custom code of the VCR.***

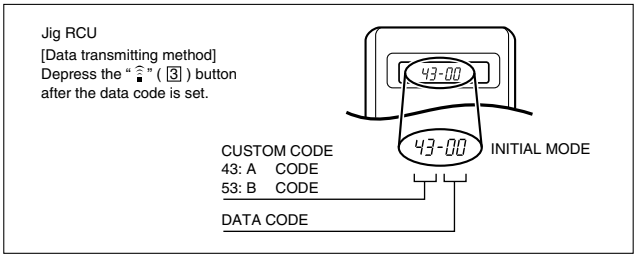


Fig. 1-8-2a Jig RCU [PTU94023B]

(1) Turn ON the power.
(2) Transmit the code "FC" from the Jig RCU.
Then the [FLASH MEMORY UTILITIES] screen is displayed. (See Fig. 1-8-2c.)
(3) Transmit the code "21" from the Jig RCU.
Select [1. ERASE], then ERASE starts. During erase [PLEASE WAIT] is displayed and when erase is completed [ERASED] will be displayed. (See Fig. 1-8-2d and Fig. 1-8-2e.)
(4) Transmit the code "23" from the Jig RCU, then the mode is cancelled. (See Fig. 1-8-2b.)

Fig. 1-8-2b

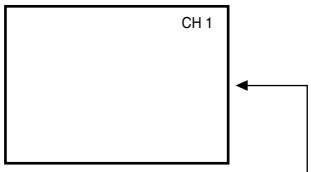


Fig. 1-8-2c

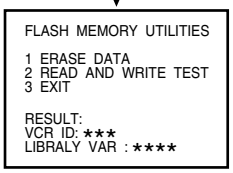


Fig. 1-8-2d

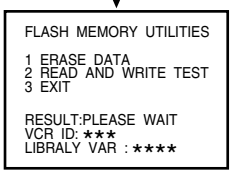
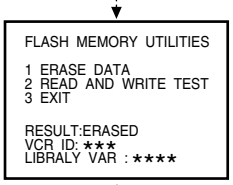


Fig. 1-8-2e



1.8.3 Factory setting level during shipment

After shipment from the factory, this is the service mode to return the rewritten EEPROM data to the factory setting level [Factory reset].

Note:

- ***When this operation is executed, all user's setting contents will return to the factory setting level, therefore care must be exercised.***

(1) Insert a cassette tape.
(2) Transmit the code "6F" from the Jig RCU.
(3) After a setting is completed, the cassette tape is automatically ejected.

SECTION 2
MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

(1) Unplug the power cable of the main unit before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When installing the front panel assembly, be sure to hook the lug on the back side of the cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE.)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Unload the cassette by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
(3) Bring the pole base assembly (supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
(4) Move the top guide toward the drum while holding down the lug Ⓐ of the bracket retaining the top guide. Likewise hold part Ⓑ down and remove the top guide. Section Ⓒ of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
(5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

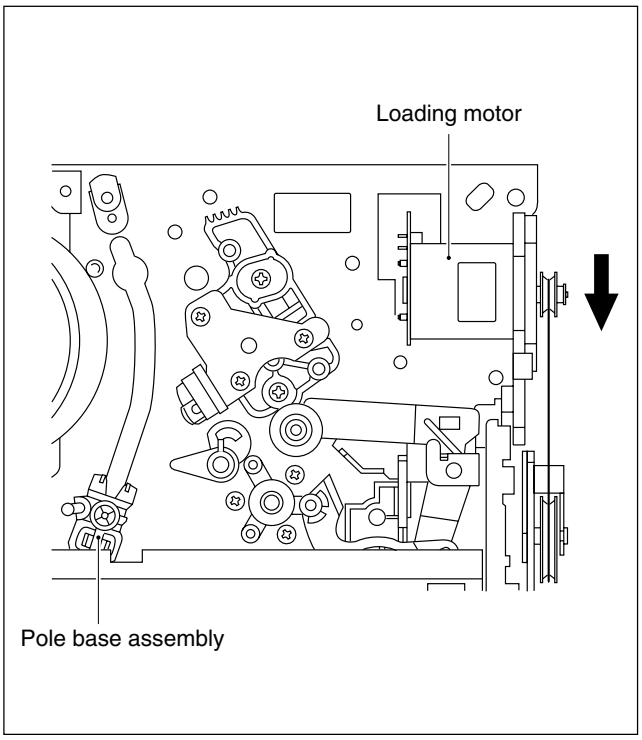


Fig. 2-1-3a

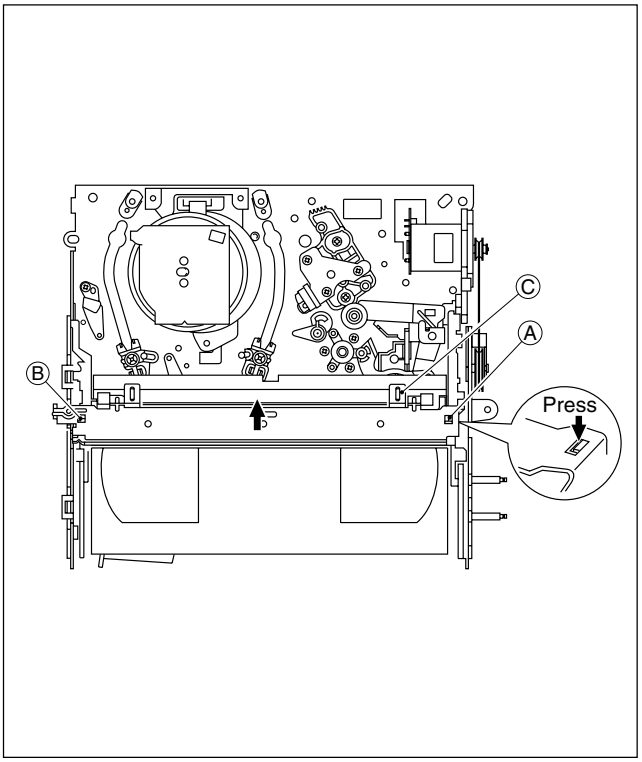


Fig. 2-1-3b

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)

(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)

(4) In the same way as in the electrical failure instructions in 2.1.3-1(4), remove the top guide.

(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.

(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

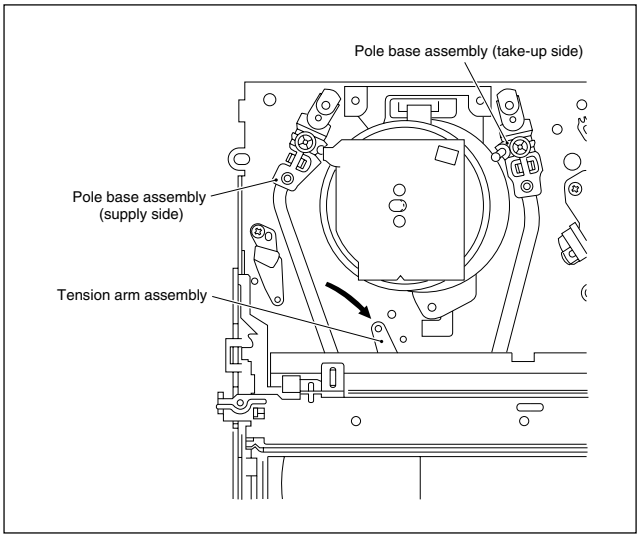


Fig. 2-1-3c

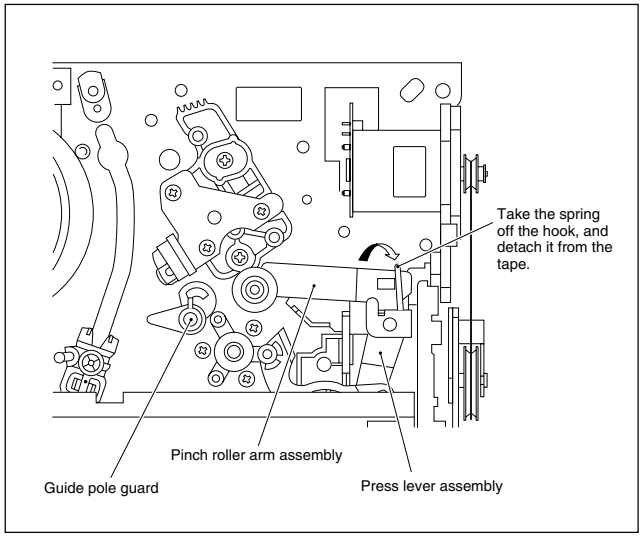
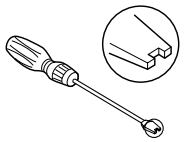
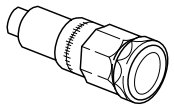
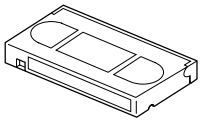
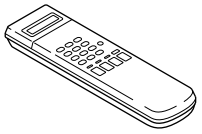
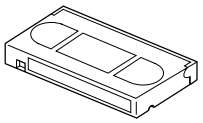
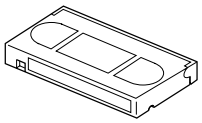


Fig. 2-1-3d

2.1.4 Jigs and Tools Required for Adjustment

Roller driver PTU94002	A/C head positioning tool PTU94010	Torque gauge PUJ48075-2
		
Back tension cassette gauge PUJ48076-2	Jig RCU PTU94023B	
		
Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L	
		

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.
It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.
The capstan pulley diameter for the standard type is approx. 32 mm.
The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.
For information on the different parts used in the two mechanism types, please refer to the “Replacement of major parts”.

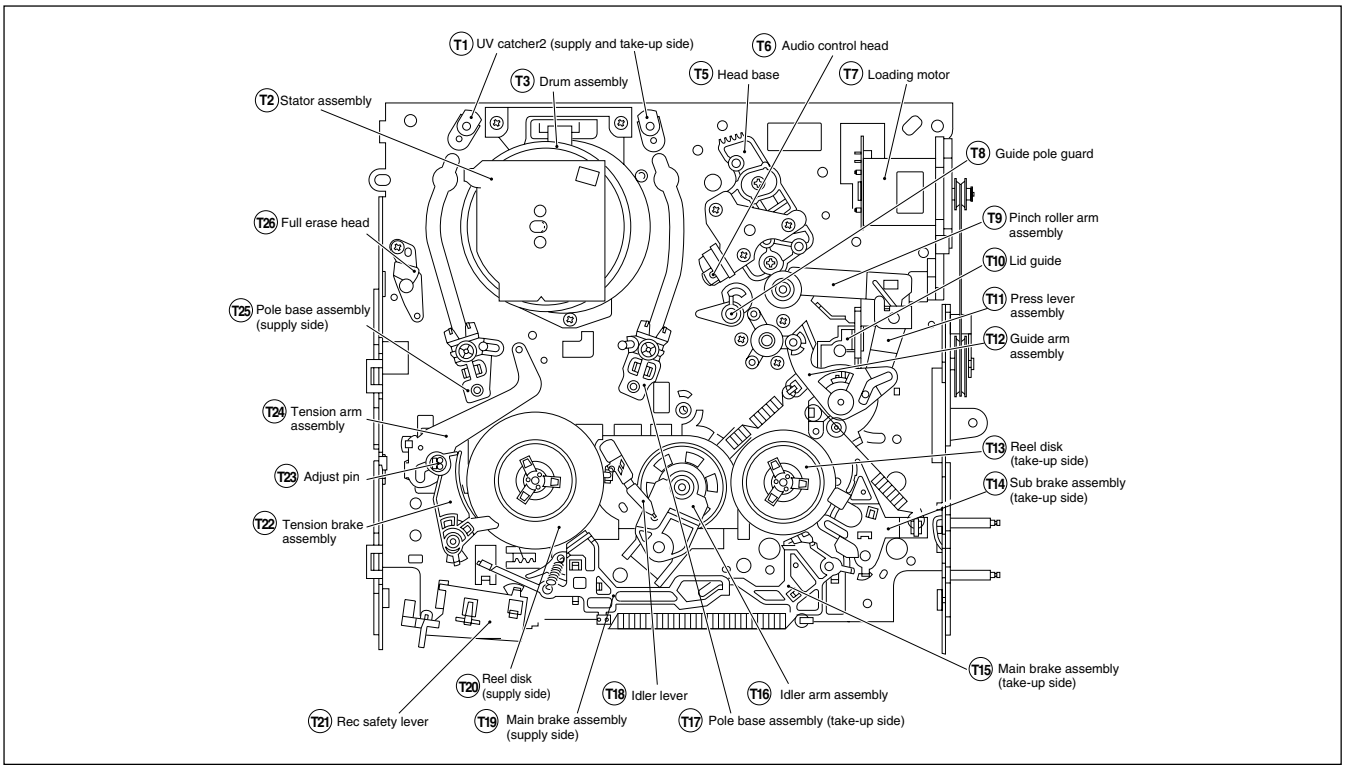

T1 UV catcher2 (supply and take-up side)
T6 Audio control head
T5 Head base
T7 Loading motor
T3 Drum assembly
T2 Stator assembly
T8 Guide pole guard
T26 Full erase head
T9 Pinch roller arm assembly
T10 Lid guide
T25 Pole base assembly (supply side)
T11 Press lever assembly
T12 Guide arm assembly
T24 Tension arm assembly
T13 Reel disk (take-up side)
T23 Adjust pin
T14 Sub brake assembly (take-up side)
T22 Tension brake assembly
T15 Main brake assembly (take-up side)
T20 Reel disk (supply side)
T18 Idler lever
T16 Idler arm assembly
T21 Rec safety lever
T19 Main brake assembly (supply side)
T17 Pole base assembly (take-up side)

Fig. 2-1-5a Mechanism assembly top side

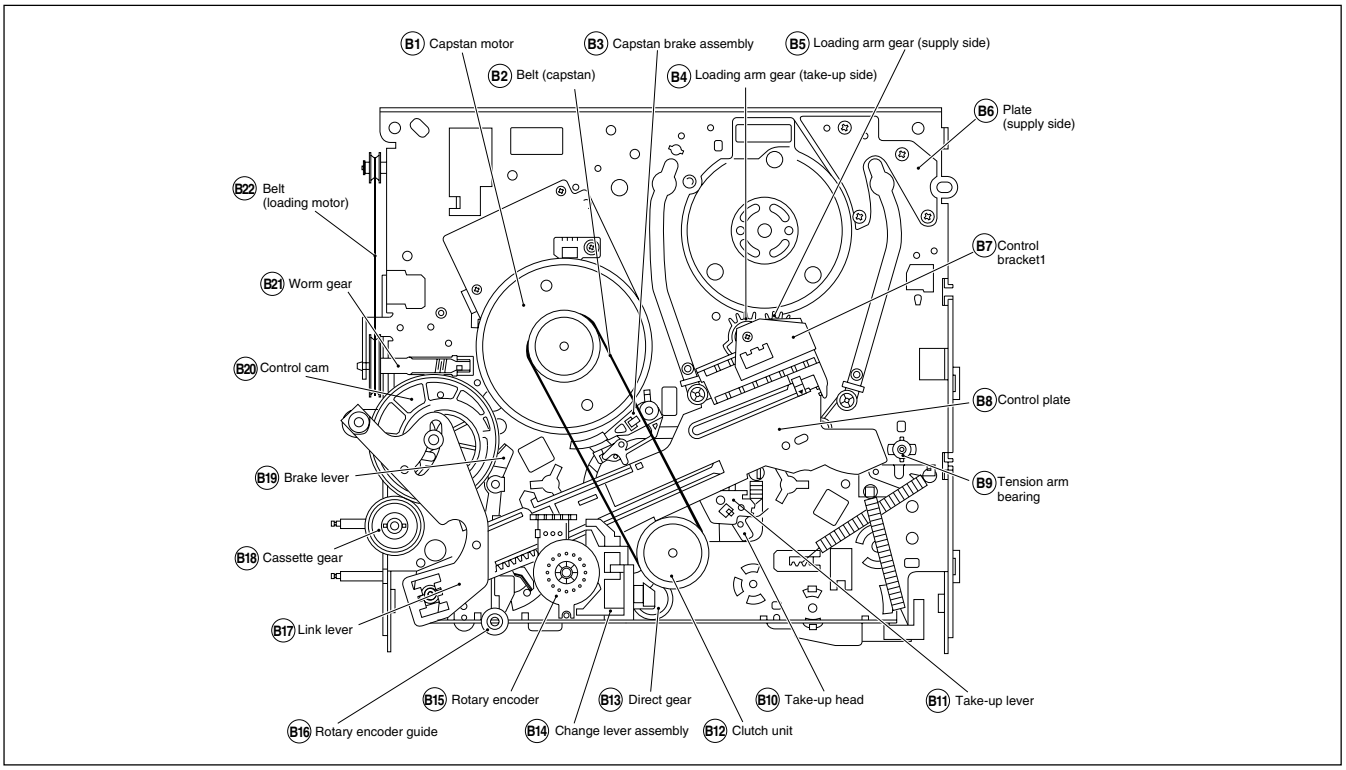


Fig. 2-1-5b Mechanism assembly bottom side

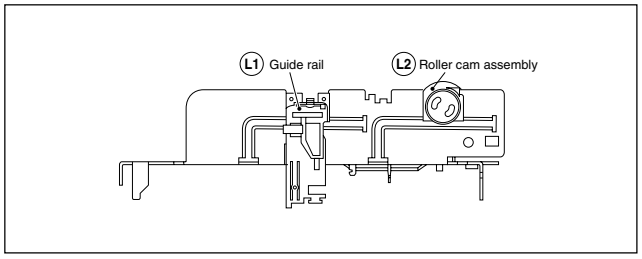


Fig. 2-1-5c Mechanism assembly left side

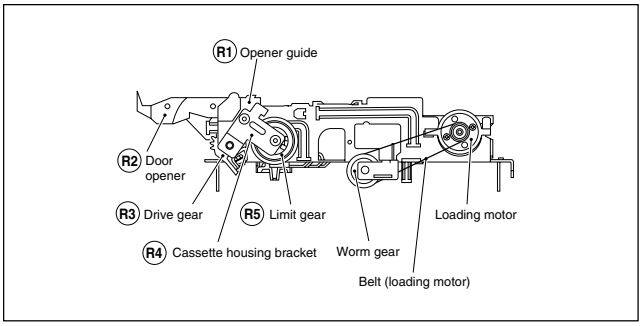


Fig. 2-1-5d Mechanism assembly right side

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note:

- ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

Note:

- ***See the "mechanism assembly" diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.***

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ : Cleaning

○ : Inspection or Replacement if necessary

Table 2-1-5a

5. Disassembling procedure table

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	L1 Guide rail	L2 Roller cam assembly	R4 Cassette housing bracket	R1 Opener guide	— Relay gear	— Cassette holder assembly	R3 Drive gear	— Drive arm	T9 Pinch roller arm assembly	T12 Guide arm assembly	T11 Press lever assembly	T1 UV catcher2	B15 Rotary encoder	B12 Clutch unit	B14 Change lever assembly	B13 Direct gear	— Clutch gear	B17 Link lever	B21 Worm gear	B7 Control bracket1	B8 Control plate	B5 Loading arm gear (supply side)	B4 Loading arm gear (take-up side)	B11 Take-up lever	T14 Sub brake assembly (take-up side)	T15 Main brake assembly (take-up side)	T13 Reel disk (take-up side)	T22 Tension brake assembly	T24 Tension arm assembly	T18 Idler lever	B19 Brake lever (*1)
L1	2.2.3 Guide rail	T	1																															
L2	2.2.3 Roller cam assembly	T	1																															
R4	2.2.3 Cassette housing bracket	T	1																															
R1	2.2.3 Opener guide	T	2			1																												
R2	2.2.3 Door opener	T	3			1	2																											
—	2.2.3 Relay gear	T	3			1	2																											
R5	2.2.3 Limit gear	T	3			1	2																											
—	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																										
R3	2.2.3 Drive gear	T	4			1	2	3																										
—	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																								
T9	2.2.4 Pinch roller arm assembly	T	1																															
T12	2.2.5 Guide arm assembly	T	1																															
T11	2.2.5 Press lever assembly	T	3									1	2																					
T6	2.2.6 Audio control head	T	1																															
T7	2.2.7 Loading motor	T	1																															
B1	2.2.8 Capstan motor	T/B	1																															
T1	2.2.9 UV catcher2	T	1																															
T17	2.2.9 Pole base assembly (take-up side)	T/B	2												1																			
T25	2.2.9 Pole base assembly (supply side)	T/B	2												1																			
B15	2.2.10 Rotary encoder	B	1																															
B12	2.2.11 Clutch unit	B	1																															
B14	2.2.12 Change lever assembly	B	3													1	2																	
B13	2.2.12 Direct gear	B	4													1	2	3																
—	2.2.12 Clutch gear	B	5													1	2	3	4															
—	2.2.12 Coupling gear (*2)	B	6													1	2	3	4	5														
B17	2.2.13 Link lever	B	1																															
B18	2.2.14 Cassette gear	B	2																		1													
B20	2.2.14 Control cam	B	2																		1													
B21	2.2.14 Worm gear	B	1																															
T10	- Lid guide	T/B	5									1	2	3								4												
B7	2.2.15 Control bracket1	B	1																															
B8	2.2.15 Control plate	B	6													1	2	3			4		5											
B5	2.2.16 Loading arm gear (supply side)	B	7													1	2	3			4		5	6										
B4	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3			4		5	6	7									
—	2.2.16 Loading arm gear shaft	B	9													1	2	3			4		5	6	7	8								
B11	2.2.17 Take-up lever	T/B	7													1	2	3			4		5	6										
B10	2.2.17 Take-up head	T/B	8													1	2	3			4		5	6			7							
—	2.2.17 Control plate guide	T/B	8													1	2	3			4		5	6			7							
B3	2.2.18 Capstan brake assembly	T/B	7													1	2	3			4		5	6										
T14	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11			12		13	14										
T15	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T19	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																							
T13	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T22	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																							
T20	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																					9		
T24	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																					9		
B9	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																					9		
T18	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	
T16	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	17
B19	- Brake lever (*1)	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				
B16	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				18

Table 2-1-5b

Note:

- ***The parts with marked (*) have different types of mechanisms (standard type or high-speed FF/REW type).***
  - **** 1 : Uses the standard type mechanism only.***
  - **** 2 : Uses the high-speed FF/REW type mechanism only.***

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)
This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

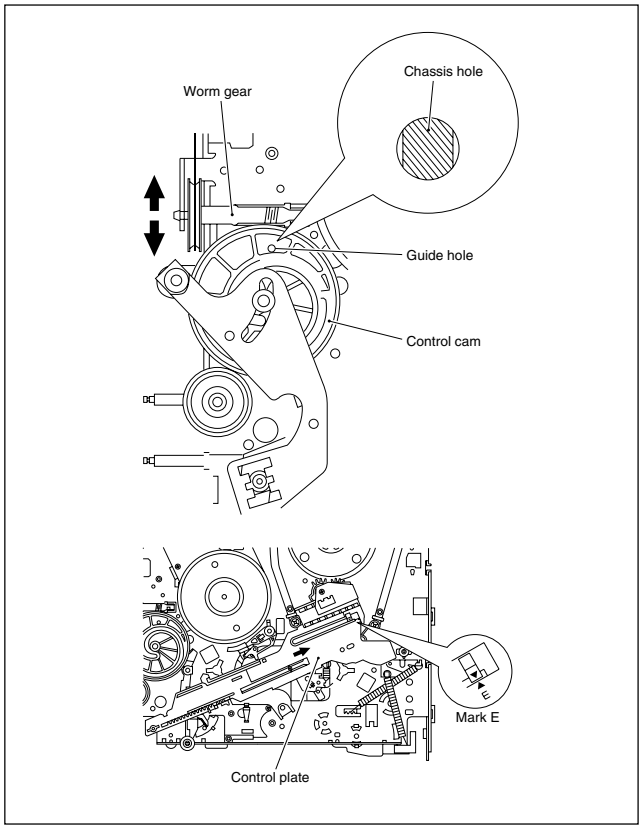


Fig. 2-2-2a

2.2.3 Cassette Holder Assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

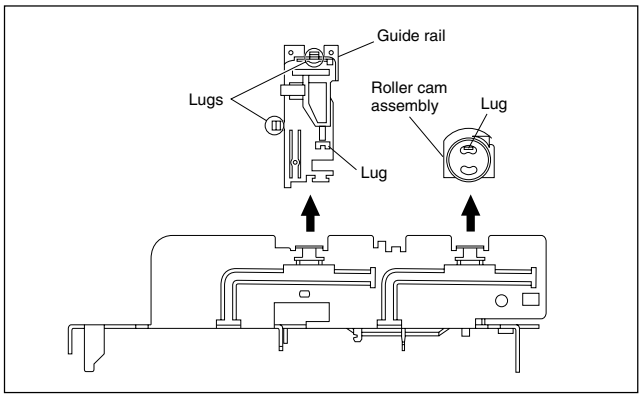


Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

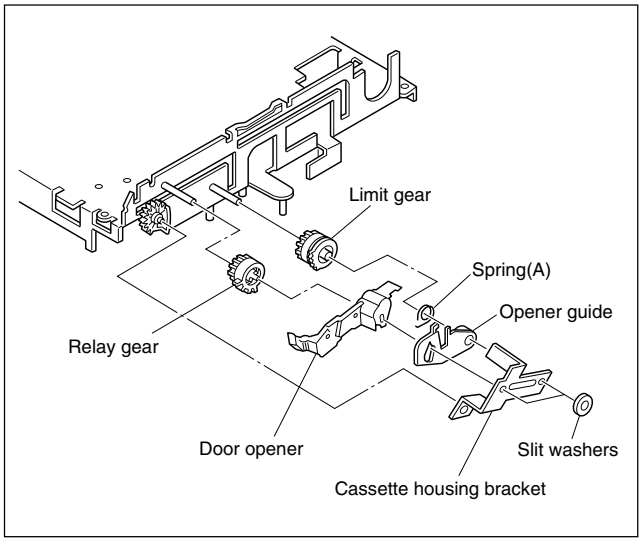


Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

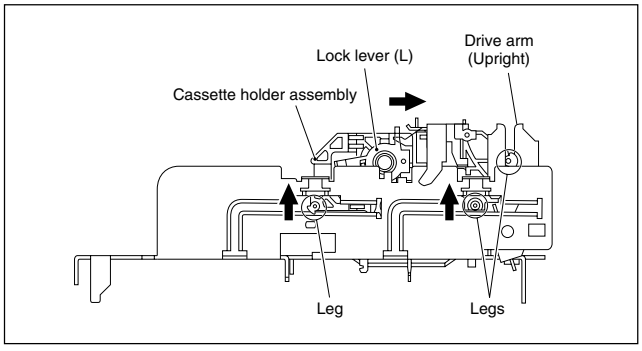


Fig. 2-2-3c

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs Ⓐ and Ⓑ on the right side out of the rail and also pull up the leg Ⓒ. (See Fig.2-2-3d and Fig.2-2-3e.)
(6) Draw out the drive gear, and remove the drive arm.

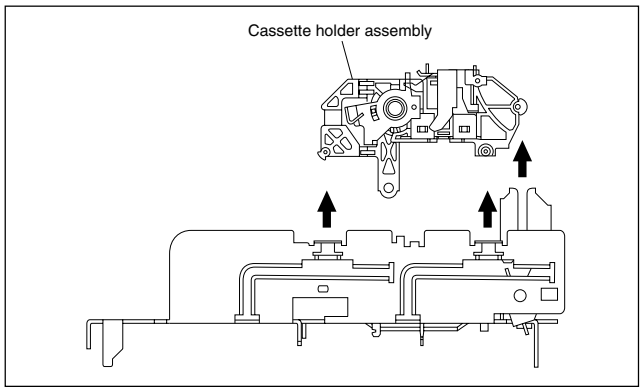


Fig. 2-2-3d

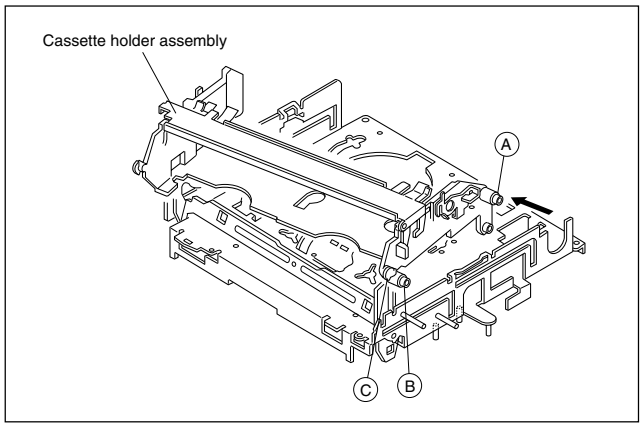


Fig. 2-2-3e

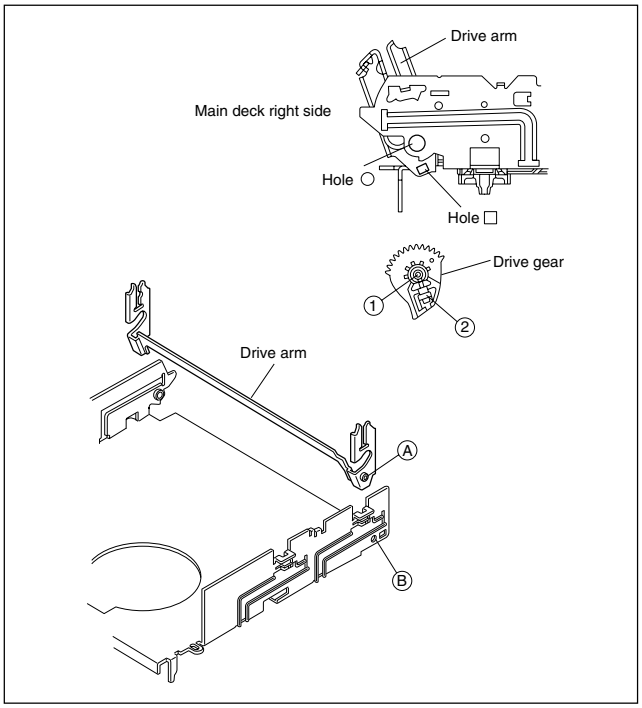


Fig. 2-2-3f

2. How to install (Phase matching)
(1) Insert the section Ⓐ of the drive arm into the section Ⓑ of the main deck.
(2) Insert the section ① of the drive gear into the round hole, and the section ② into the square hole on the drive arm. (See Fig.2-2-3f.)
(3) Hold the drive arm upright and fit the leg Ⓒ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)
(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs Ⓐ and Ⓑ into the rail. (See Fig.2-2-3g.)
(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)
(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.
(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)
(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)
(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

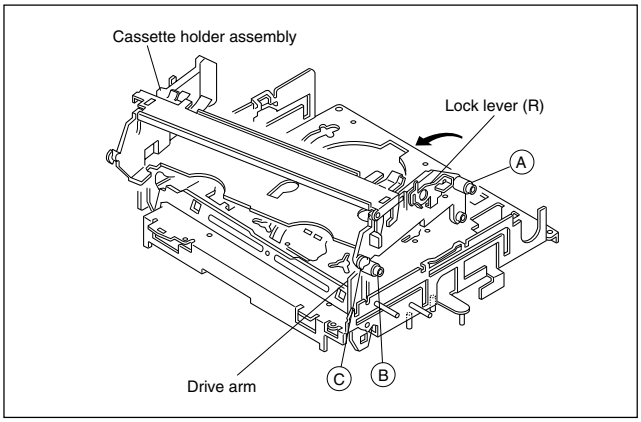


Fig. 2-2-3g

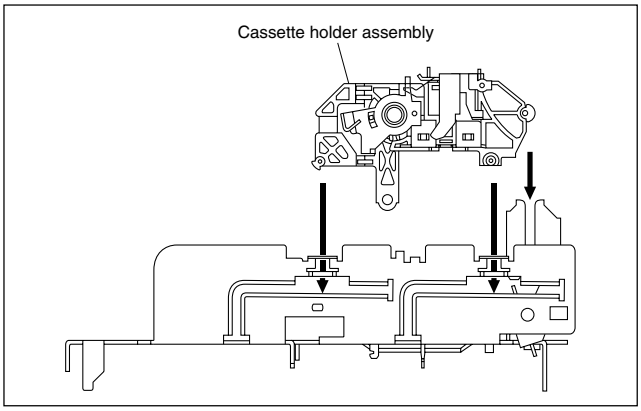


Fig. 2-2-3h

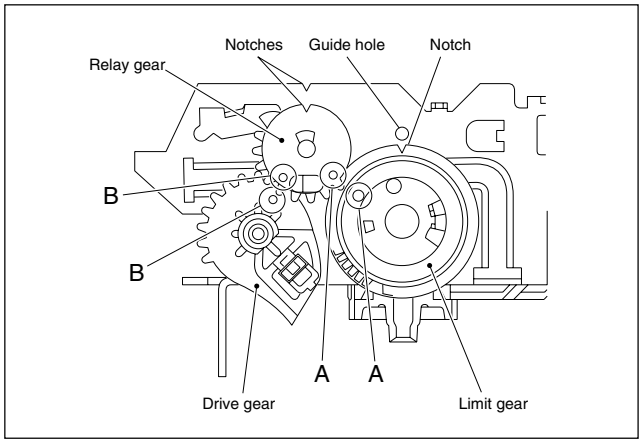


Fig. 2-2-3i

2.2.4 Pinch Roller Arm Assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
(3) Remove the pinch roller arm assembly by pulling it up.

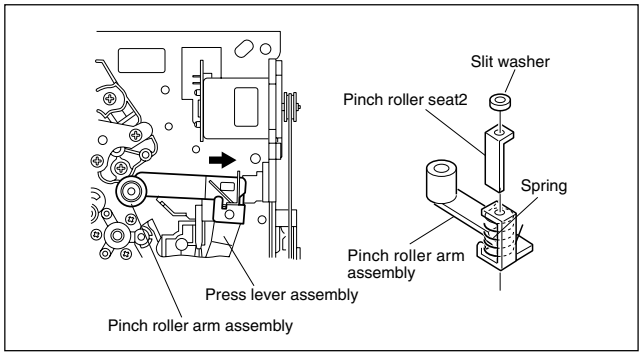


Fig. 2-2-4a

2.2.5 Guide Arm Assembly and Press Lever Assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

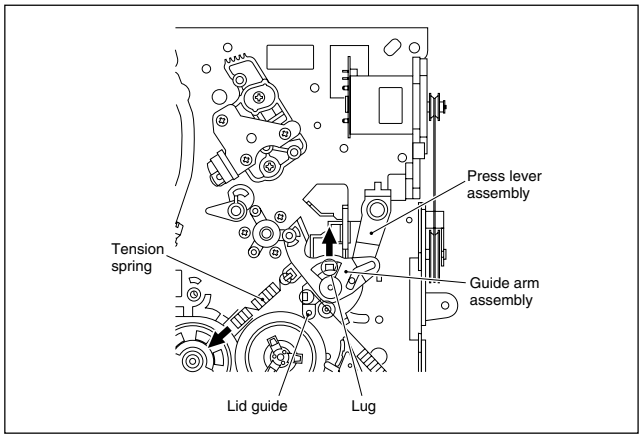


Fig. 2-2-5a

2.2.6 Audio Control Head

1. How to remove

(1) Remove the two screws (A) and remove the audio control head together with the head base.
(2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

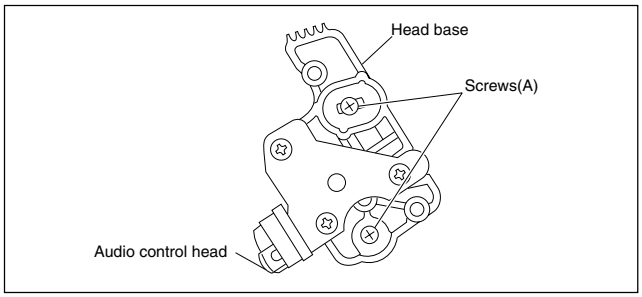


Fig. 2-2-6a

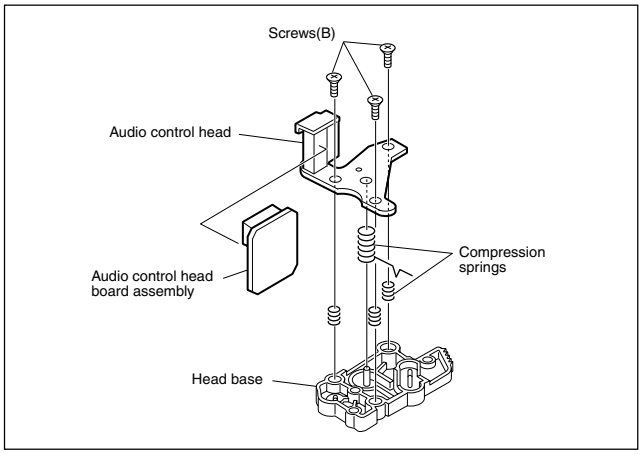


Fig. 2-2-6b

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

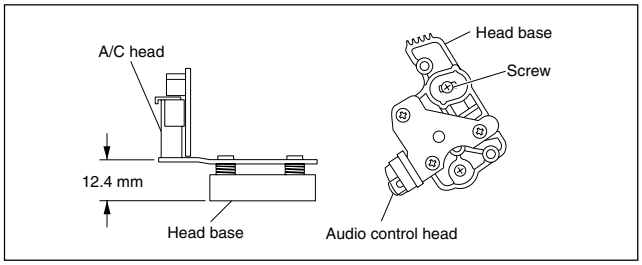


Fig. 2-2-6c

2.2.7 Loading Motor

1. How to remove

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

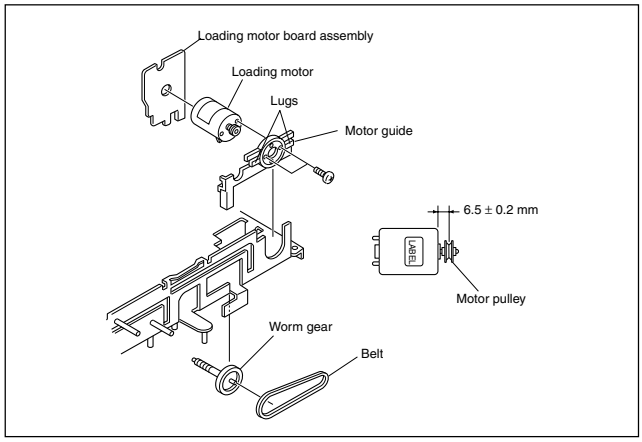


Fig. 2-2-7a

2.2.8 Capstan Motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.
(2) Remove the three screws (A) and remove the capstan motor.

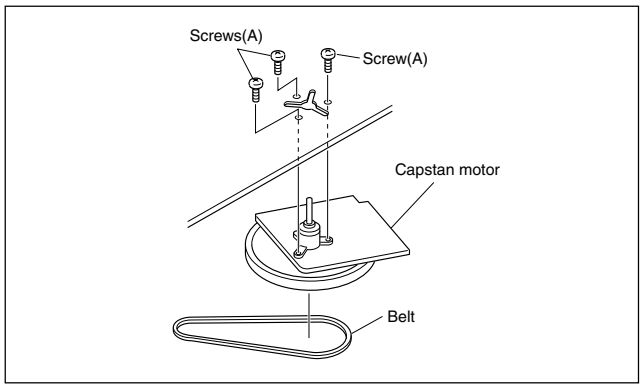


Fig. 2-2-8a

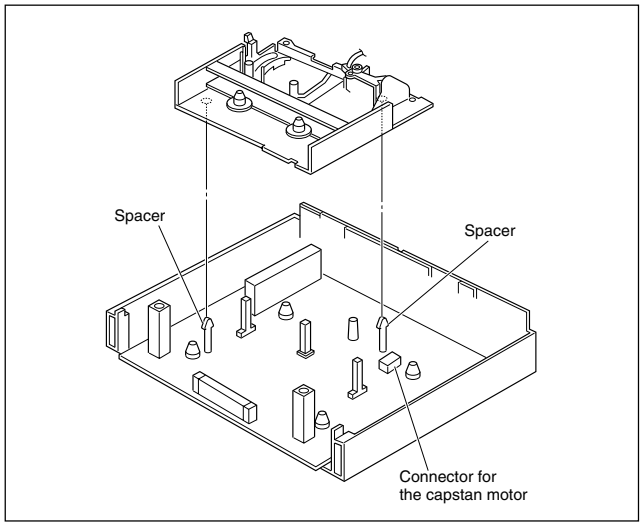


Fig. 2-2-8b

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.
(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.
(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note:

- ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole Base Assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the “Procedures for Lowering the Cassette holder assembly” of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

Note:

- ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

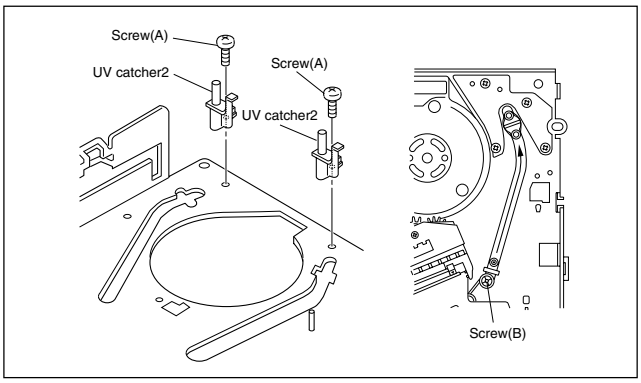


Fig. 2-2-9a

2.2.10 Rotary Encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

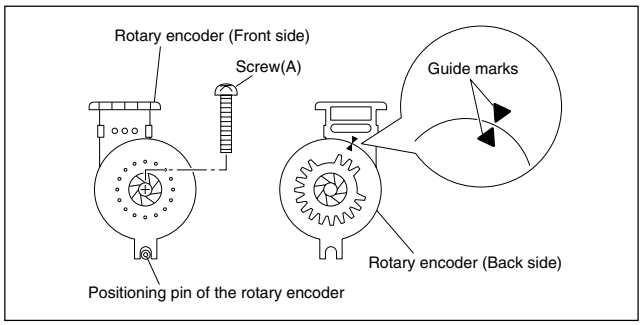


Fig. 2-2-10a

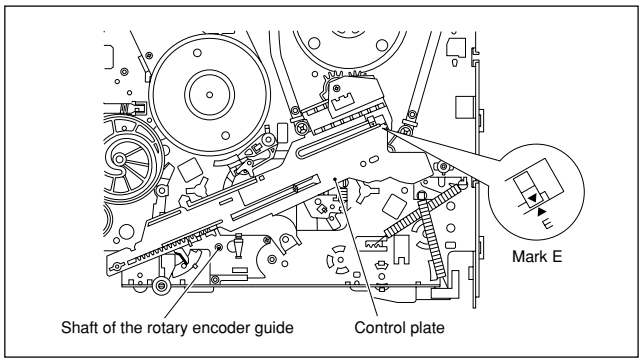


Fig. 2-2-10b

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)
(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.
(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch Unit

(1) Remove the belt wound around the capstan motor and the clutch unit.
(2) Remove the slit washer and remove the clutch unit.

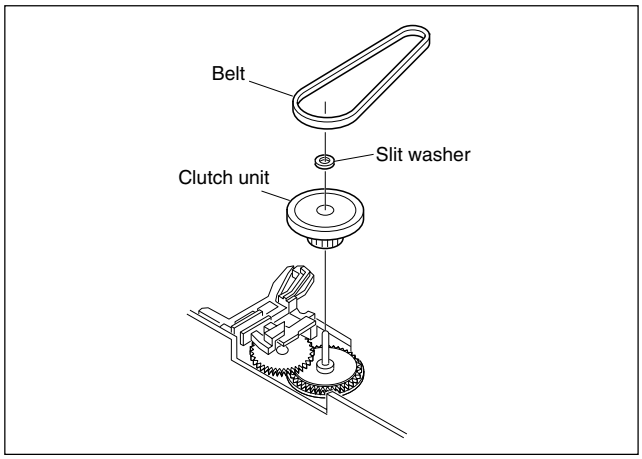


Fig. 2-2-11a

2.2.12 Change Lever Assembly, Direct Gear, Clutch Gear and Coupling Gear

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.
(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)

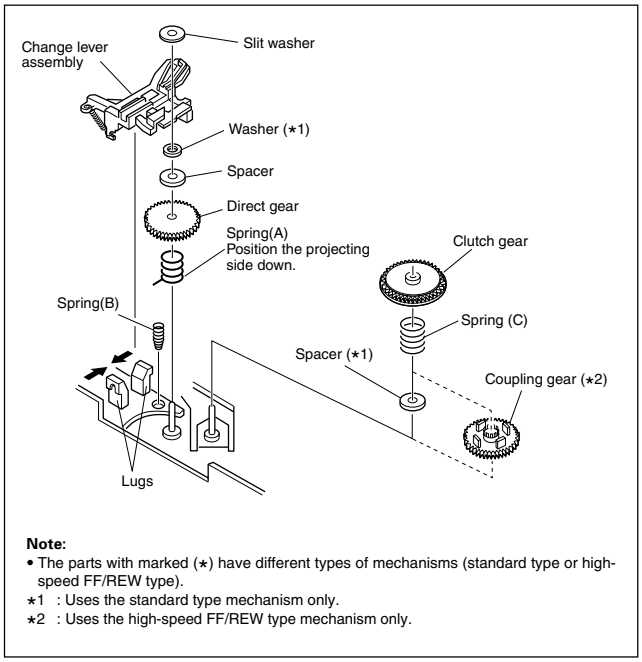


Fig. 2-2-12a

2. How to install

(1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)
(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the clutch gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

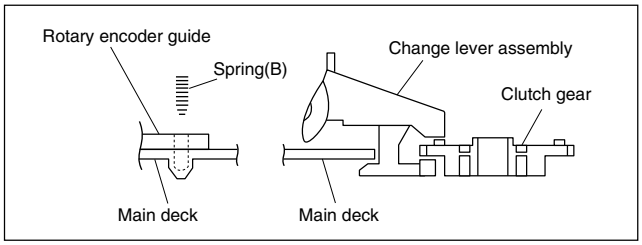


Fig. 2-2-12b

2.2.13 Link Lever

1. How to remove

(1) Remove the two slit washers.
(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

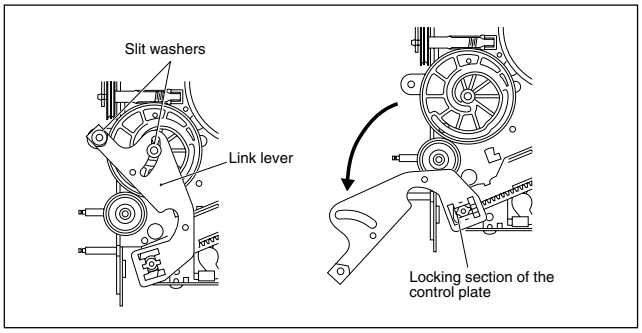


Fig. 2-2-13a

2. How to install (Phase matching)

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)
(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)
(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)
(4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.
(5) Fasten the slit washers at these two points.

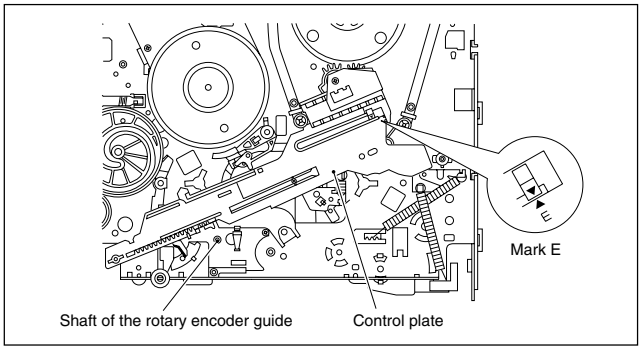


Fig. 2-2-13b

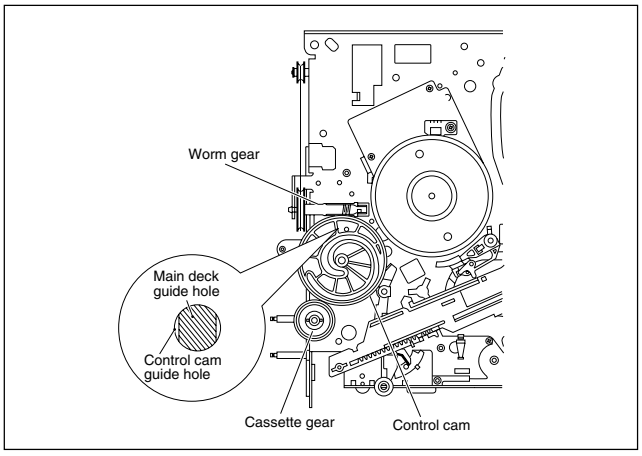


Fig. 2-2-13c

2.2.14 Cassette Gear, Control Cam and Worm Gear

1. How to remove

(1) Remove the control cam by lifting it.
(2) Open the two lugs of the cassette gear outward and pull the latter off.
(3) Remove the belt wound around the worm gear and the loading motor.
(4) Open the lug of the lid guide outward and remove the worm gear.

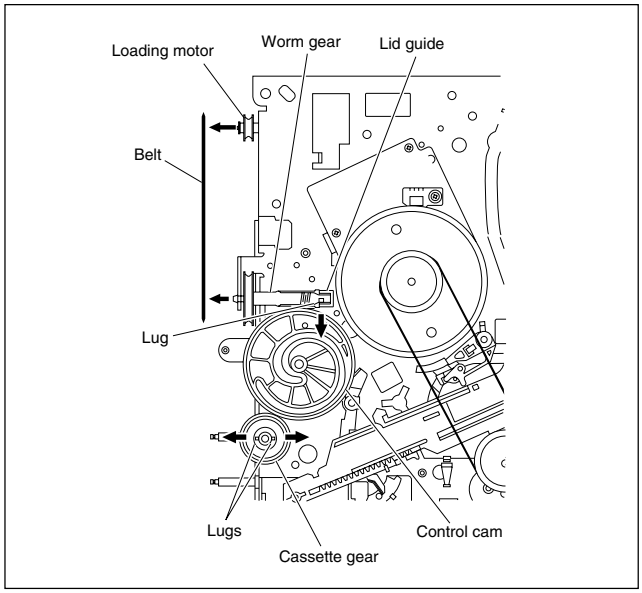


Fig. 2-2-14a

2.2.15 Control Plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

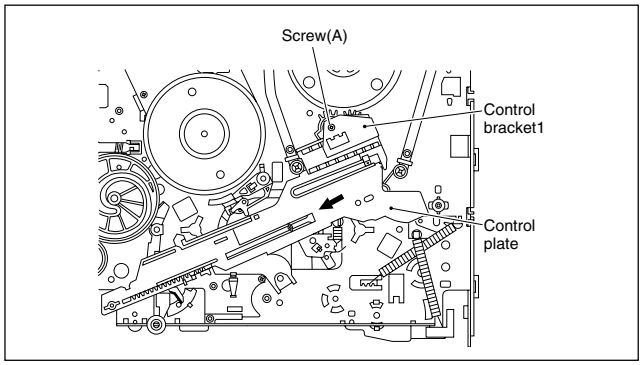


Fig. 2-2-15a

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).
(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
(5) Pull off the hexagonal wrench for positioning.

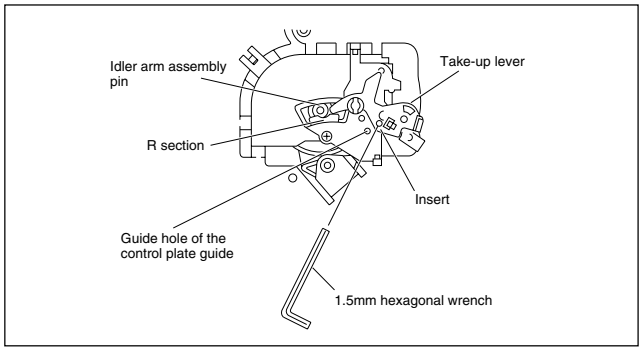


Fig. 2-2-15b

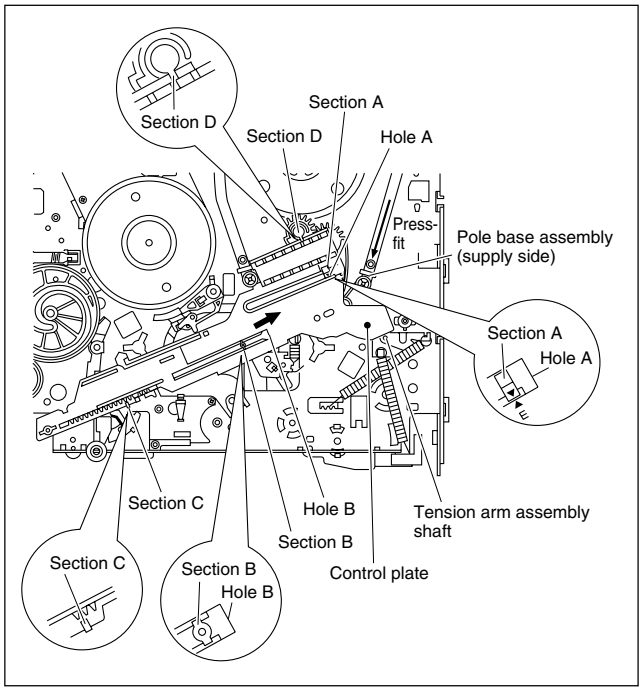


Fig. 2-2-15c

2.2.16 Loading Arm Gear (supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

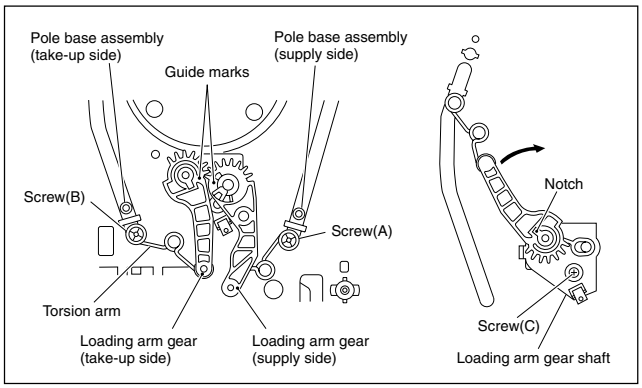


Fig. 2-2-16a

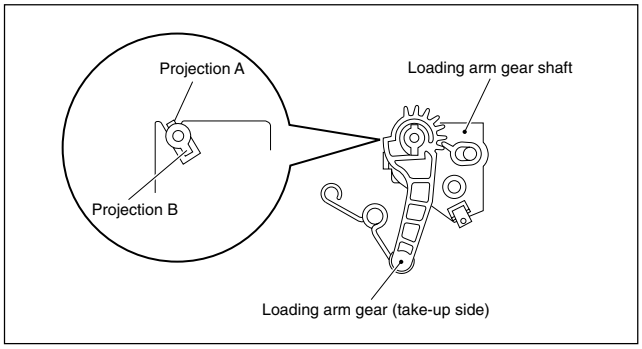


Fig. 2-2-16b

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

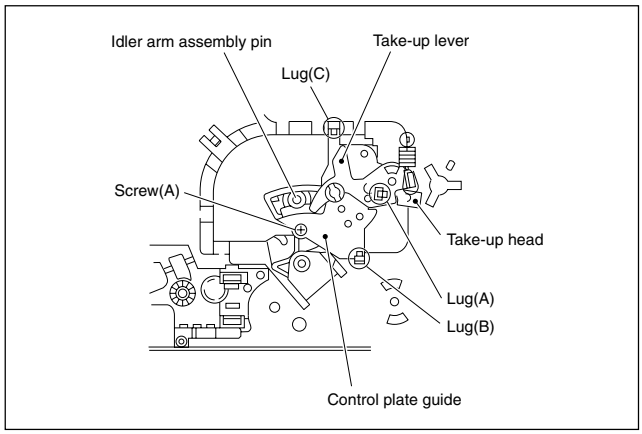


Fig. 2-2-17a

2.2.18 Capstan Brake Assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

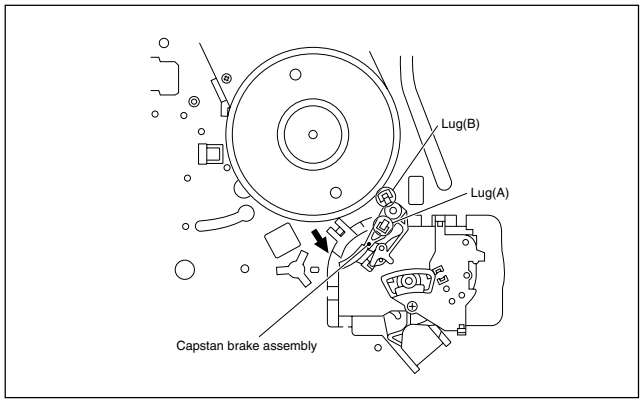


Fig. 2-2-18a

2.2.19 Sub Brake Assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

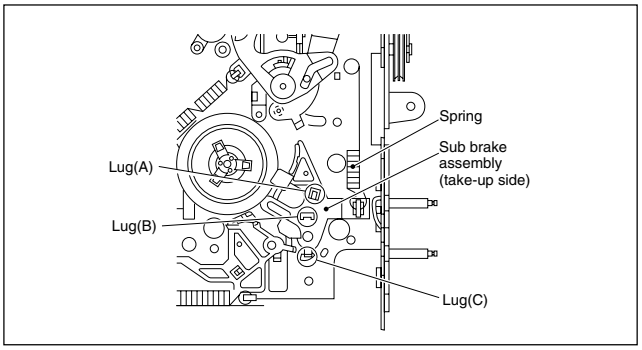


Fig. 2-2-19a

2.2.20 Main Brake Assembly (take-up side), Reel Disk (take-up side) and Main Brake Assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

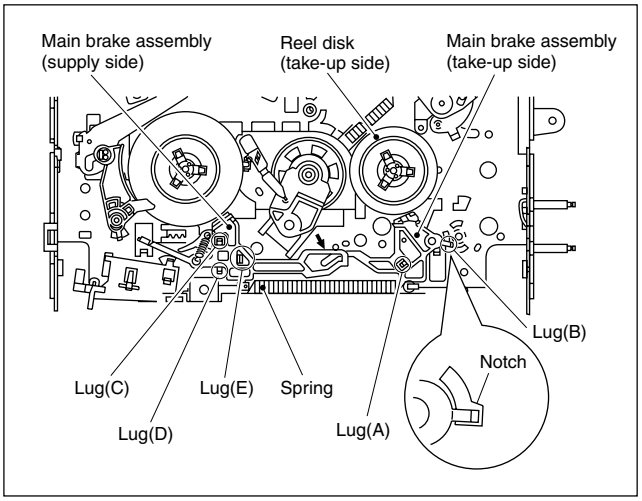
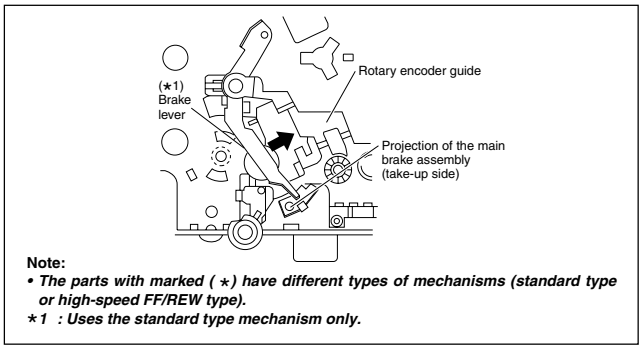


Fig. 2-2-20a



Note:
• The parts with marked (∗) have different types of mechanisms (standard type or high-speed FF/REW type).
∗1 : Uses the standard type mechanism only.

Fig. 2-2-20b

2.2.21 Tension Brake Assembly, Reel Disk (supply side) and Tension Arm Assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

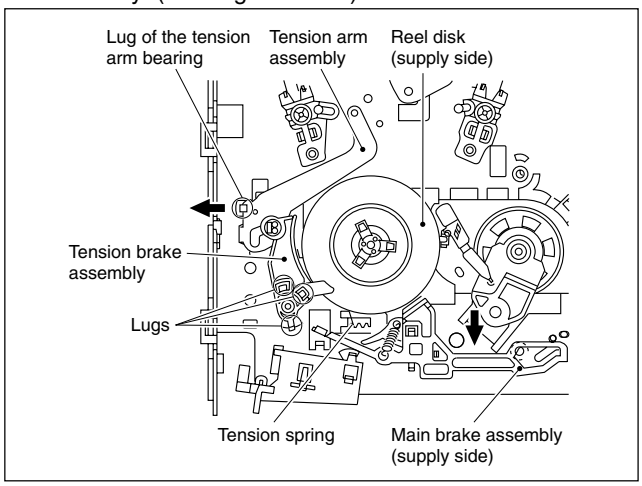


Fig. 2-2-21a

2.2.22 Idler Lever, Idler Arm Assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
(2) Remove the slit washer and pull out the idler arm assembly.

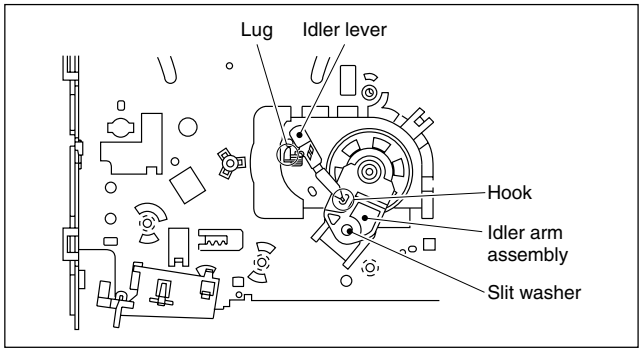


Fig. 2-2-22a

2.2.23 Stator Assembly

(1) Remove the flat cable.
(2) Remove the two screws (A).
(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)
(4) After installation, be sure to perform the PB switching point adjustment according to the electrical adjustment procedure.

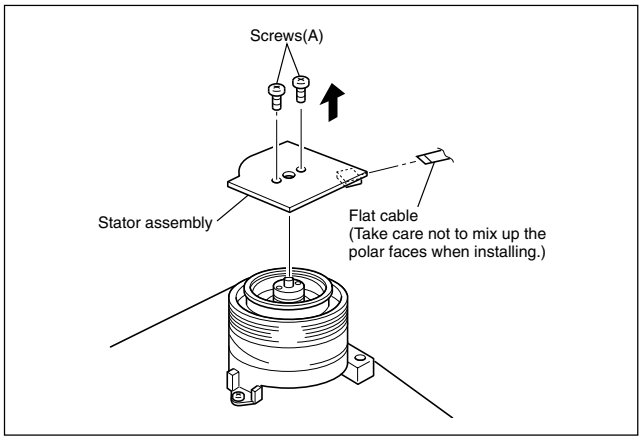


Fig. 2-2-23a

2.2.24 Rotor Assembly

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

Note:

- ***When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.***

(3) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.
(4) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

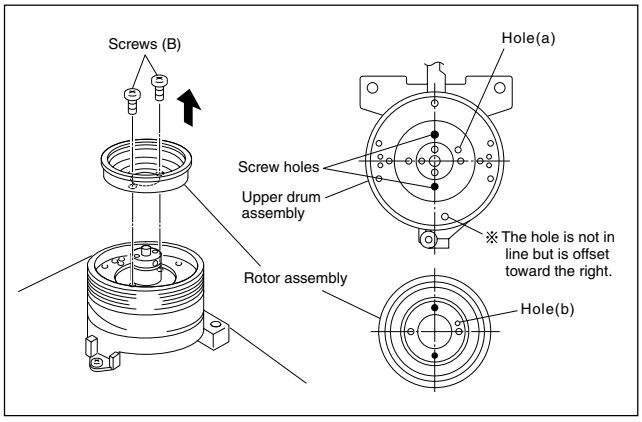


Fig. 2-2-24a

2.2.25 Upper Drum Assembly

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

Note:

- ***When replacement is required, control the up- down movement of the brush. Never apply grease.***

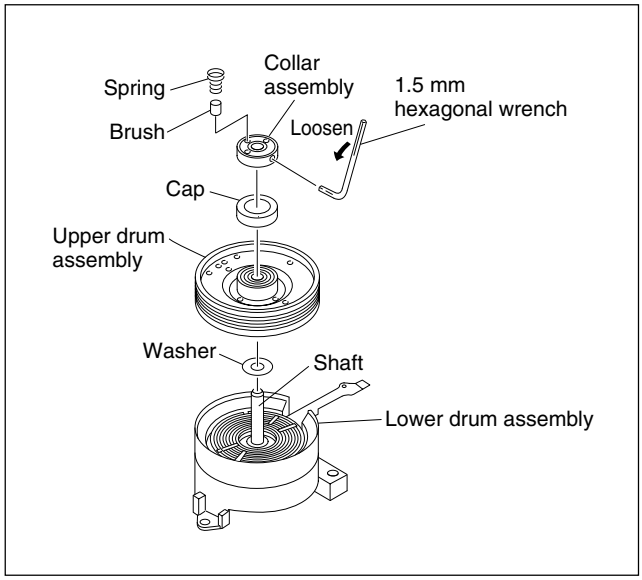


Fig. 2-2-25a

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)

Note:

- ***When replacing the upper drum assembly, replace it the together with the washer.***

(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
    - PB switching point adjustment
    - Slow tracking adjustment
    - Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

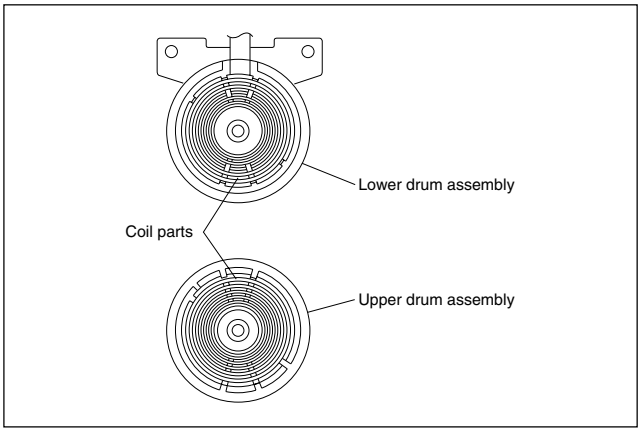


Fig. 2-2-25b

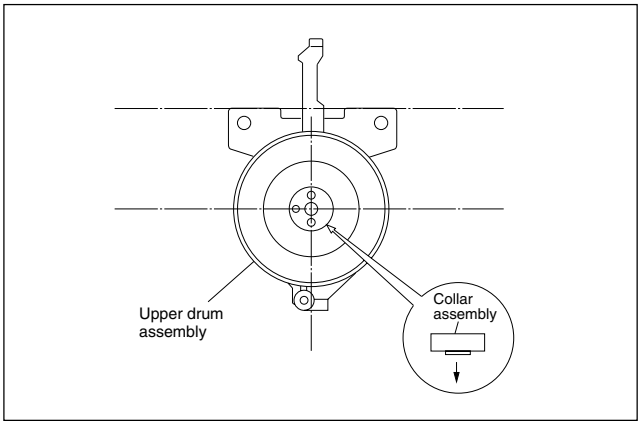


Fig. 2-2-25c

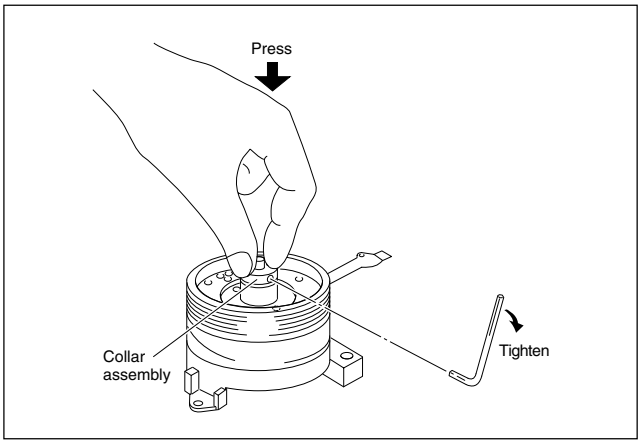


Fig. 2-2-25d

2.3 COMPATIBILITY ADJUSTMENT

Notes:

- ***Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.***
- ***To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

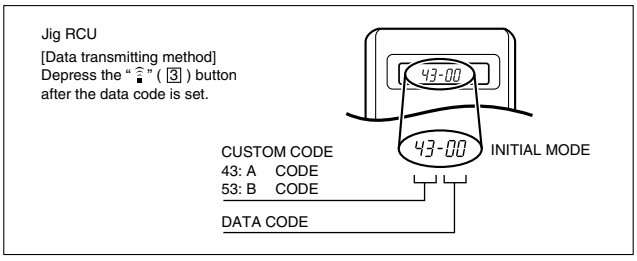


Fig. 2-3a Jig RCU [PTU94023B]

2.3.1 Checking/Adjustment of FM Waveform Linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, NTSC) [MHP] • Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
(5) Reduce the V.PB FM waveform while pressing the channel buttons (+, –) during playback. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

(9) Repeat steps (1) to (8) by using the alignment tape (A2).

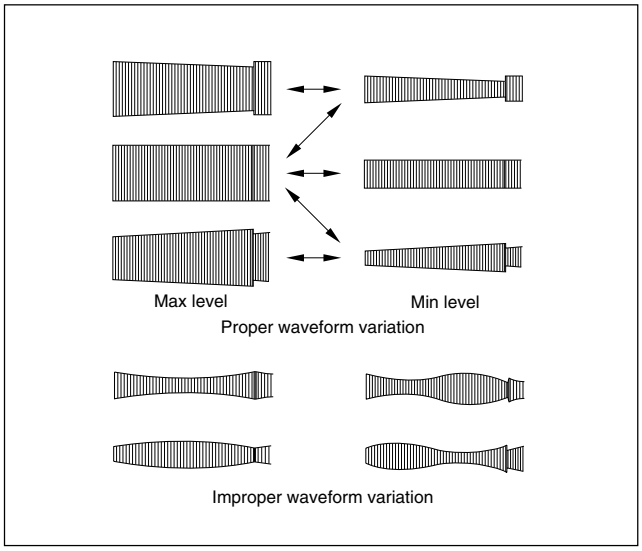


Fig. 2-3-1a

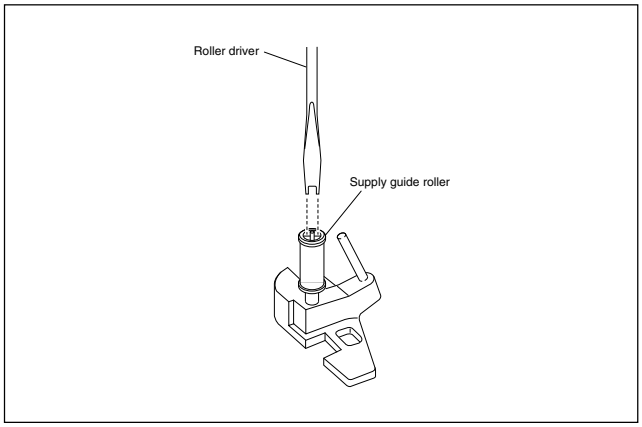


Fig. 2-3-1b

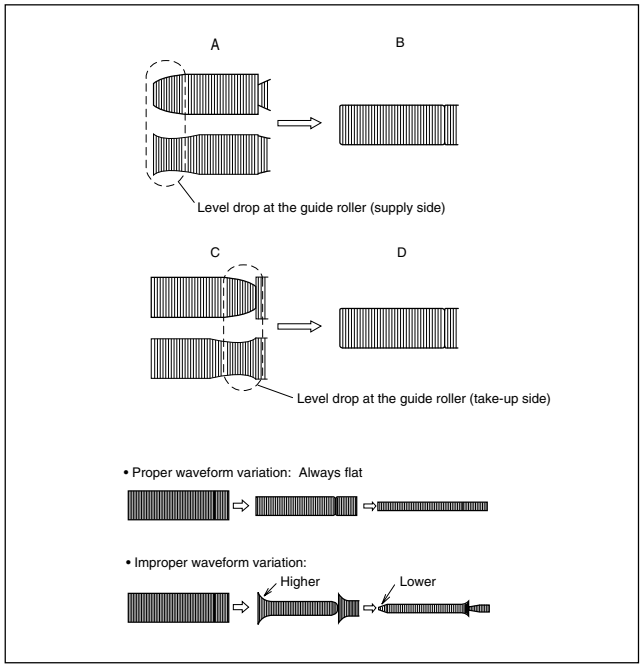


Fig. 2-3-1c

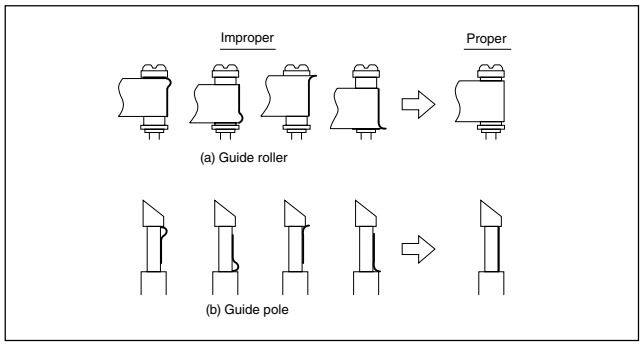


Fig. 2-3-1d

2.3.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note:

- ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)***

Signal	(A)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

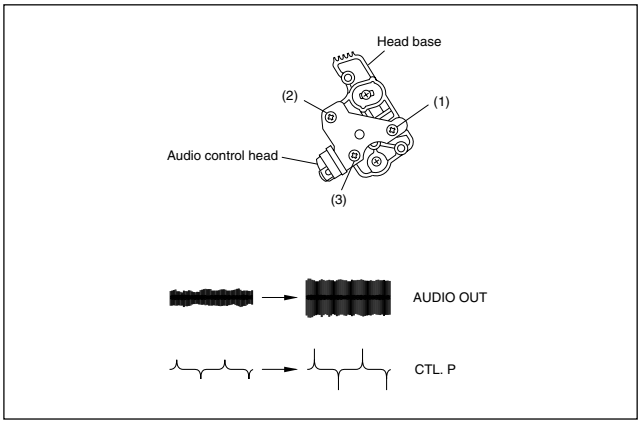


Fig. 2-3-2a

2.3.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

Signal	(A1)	• Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Maximum V.PB FM waveform
Adjustment tool	(H)	• A/C head positioning tool [PTU94010]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
(6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

[Perform adjustments steps (7) to (10) only for 2 Head models equipped with LP mode.]

(7) Then play back the alignment tape (A2).
(8) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
(10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

Note:

• After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.

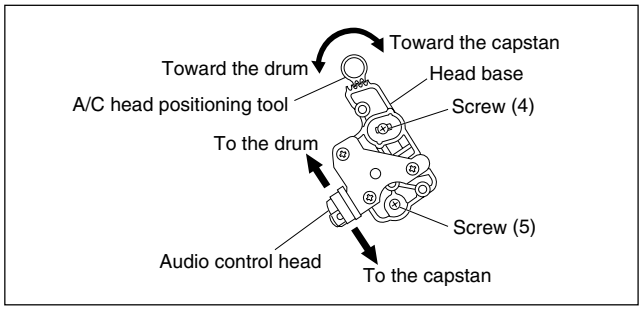


Fig. 2-3-3a

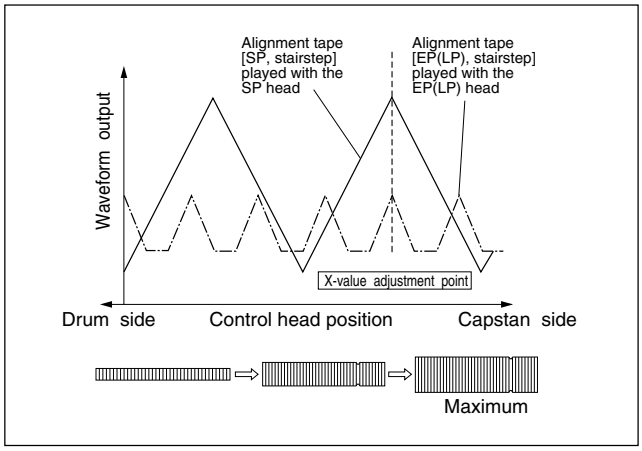


Fig. 2-3-3b

2.3.4 Checking/Adjustment of the Standard Tracking Preset

Signal	(A)	• Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code “50”
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Confirm that the automatic tracking operation is completed.
(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

2.3.5 Checking/Adjustment of the Tension Pole Position

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 – 5 × 10^{-3} Nm]

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  1) Set the VCR to the mechanism service mode. (See 1.5 MECHANISM SERVICE MODE.)
  2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

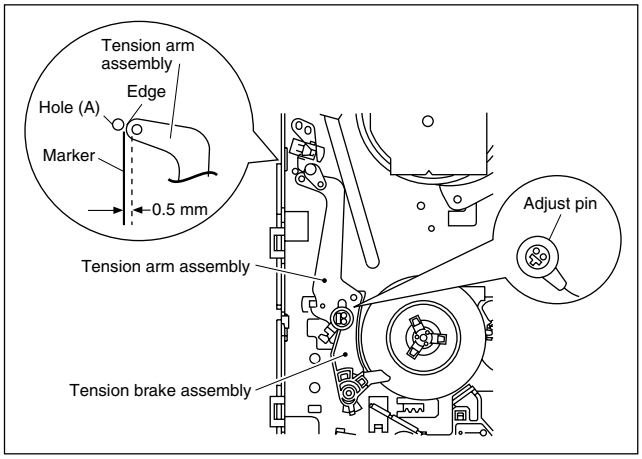
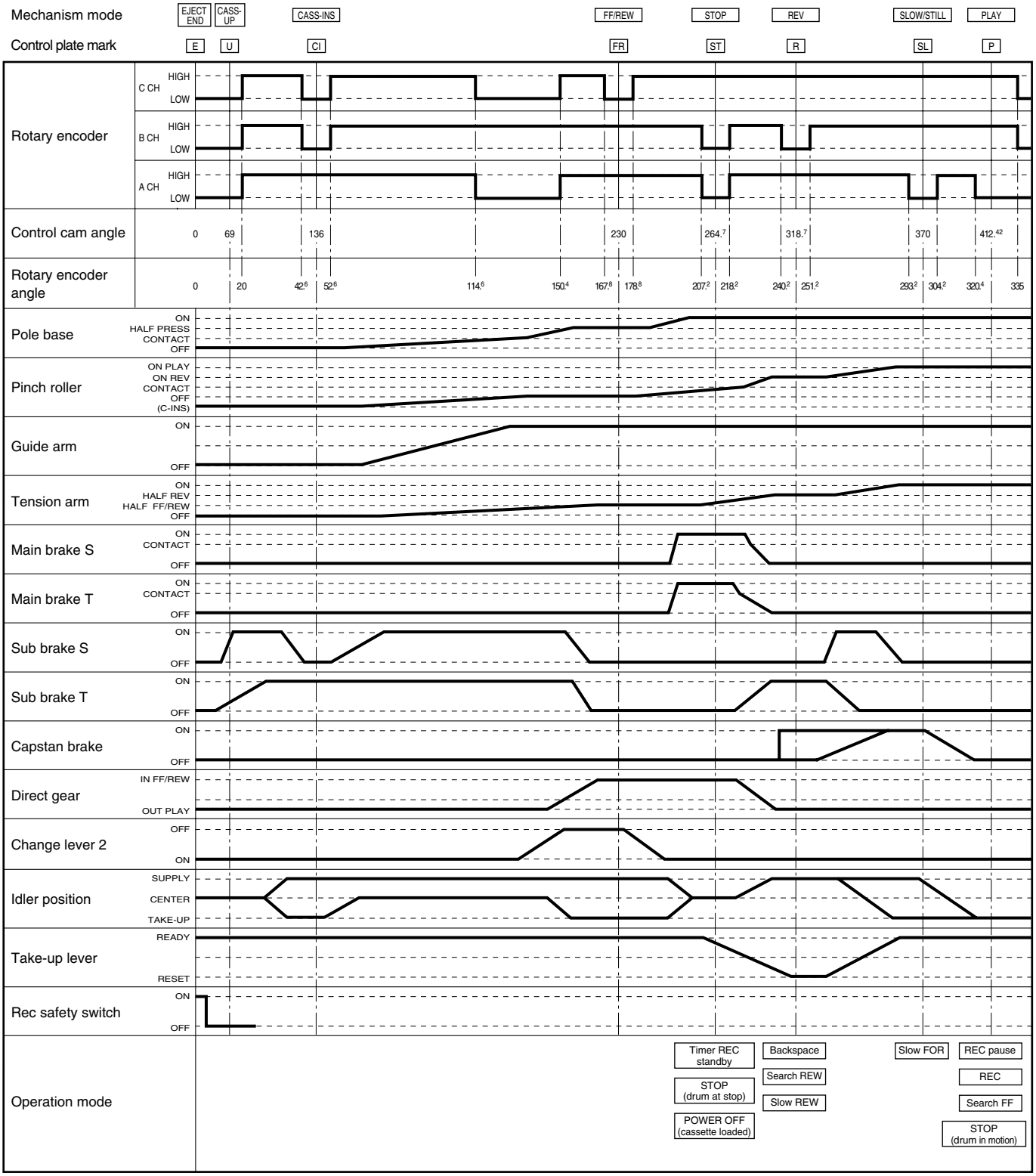


Fig. 2-3-5a

Mechanism Timing Chart



SECTION 3
ELECTRICAL ADJUSTMENT

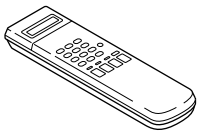
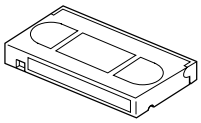
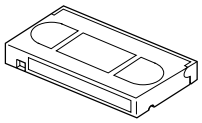
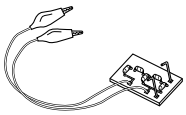
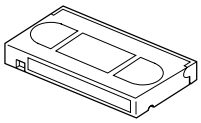
3.1 PRECAUTION

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

3.1.1 Required test equipments

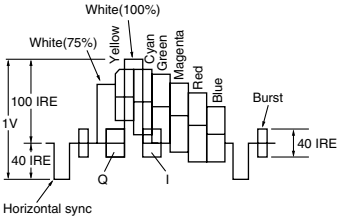
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Audio level meter
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [NTSC]
- Recording tape
- Digit-key remote controller(provided)

3.1.2 Required adjustment tools

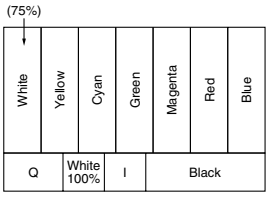
Jig RCU PTU94023B	Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L
		
LPF PTU93006	Alignment tape (S-VHS, SP/EP, color (colour) bar) MH-1H	
		

3.1.3 Color (colour) bar signal,Color (colour) bar pattern

● **Color bar signal [NTSC]**



● **Color bar pattern [NTSC]**



3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

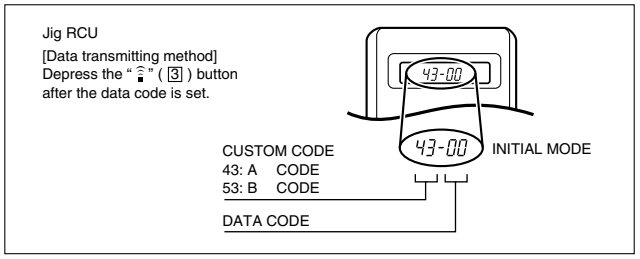


Fig. 3-1-4a Jig RCU [PTU94023B]

- ***Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.***
  If the VCR is not equipped with the functions detailed below, setup is not required.

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF

- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***In the Signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.***

3.1.5 EVR Adjustment

Some of the electrical adjustments require the adjustment performed by the EVR system. The Main board assembly have EEPROMs for storing the EVR adjustment data and user setups.

Notes:

- ***In the EVR adjustment mode, the value is varied with the channel buttons (+, –). The adjusted data is stored when the setting mode changes (from PB to STOP, when the tape speed is changed, etc.). Take care to identify the current mode of each adjustment item when making an adjustment.***
- ***When changing the address setting in the EVR adjustment mode, use the Jig RCU or the remote controller having numeric keypad with which a numeric code can be directly input.***
  The remote control code of the Jig RCU corresponds to each of the digit keys on the remote controller as follows.

Digit-key	0	1	2	3	4	5	6	7	8	9
Code	20	21	22	23	24	25	26	27	28	29

- ***As the counter indication and remaining tape indication are not displayed FDP during the EVR adjustment mode, check them on the TV monitor screen.***
- ***When performing the EVR adjustment, confirm that the FDP indication is changed to the EVR mode, as shown below.***

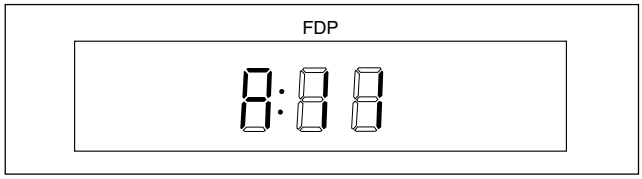


Fig. 3-1-5a EVR mode

3.2 SERVO CIRCUIT

3.2.1 Switching point

Signal	(A1) (A2)	• Stairstep signal • Alignment tape(SP, stairstep, NTSC) [MHP]
Mode	(B)	• PB • TBC: OFF
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal (75Ω terminated) • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : –
Adjustment part	(F)	• Jig RCU: Code “51” or “52”
Specified value	(G)	• 8.0 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Adjust tracking by pressing the channel buttons (+, –) so that the V.PB FM waveform becomes maximum.
(5) Transmit the code (F) from the Jig RCU to adjust so that the trigger point of the VIDEO OUT waveform is changed from the trailing edge of the V.sync signal becomes the specified value (G).
(6) Set the VCR to the stop mode or eject mode.

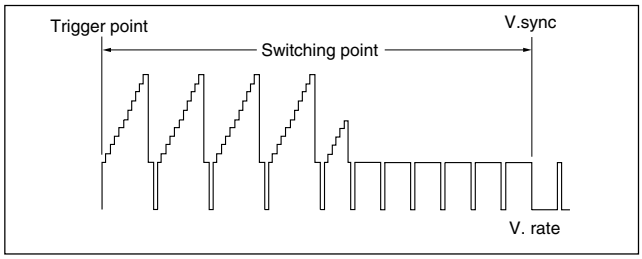


Fig. 3-2-1a Switching point

3.2.2 Slow tracking preset

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• S-VHS SP • S-VHS EP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig RCU: Code “71“ or “72”
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(3) Set the VCR to the FWD slow mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow mode.
(8) Repeat steps (1) to (7) in the mode (B2).

Note:

- ***For FWD slow (+1/6×) playback, transmit the code “08” from the Jig RCU to enter the slow playback mode, and transmit the code “D0” for REV slow (–1/6×) mode.***

3.2.3 Dynamic Drum preset

Signal	(A1) (A2) (A3)	• Alignment tape(EP, stairstep, NTSC) [MHP-L] • Ext. input • Stairstep signal
Mode	(B1) (B2) (B3)	• EP 3× (FWD) search • EP • EP 1/6× (FWD) slow
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : +
Adjustment part	(F)	• Jig RCU: Code “A0” or “A1”
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Play back the signal (A3) of the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E) to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Adjust tracking by pressing the channel buttons (+, –) so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the mode (B1).
(6) Adjust tracking by pressing the channel buttons (+, –) so that the V.PB FM waveform becomes half of the maximum value.
(7) Transmit the code (F) from the Jig RCU to adjust so that the V.PB FM waveform becomes the specified value (G).
(8) Set the VCR to the PB mode once, set the VCR to the mode (B1) again and confirm that the V.PB FM waveform is the specified value (G). If the specified value (G) is not obtained, repeat step (7).
(9) Record the signal (A3) in the mode (B2), and play back the recorded signal.
(10) Repeat steps (3) to (8), for perform step (5) in the mode (B3).

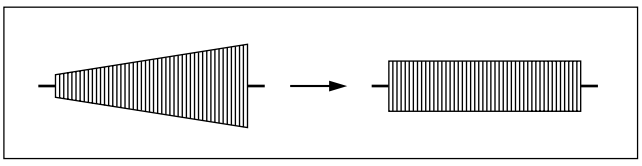


Fig. 3-2-3a DD preset

3.3 VIDEO CIRCUIT

3.3.1 D/A level

Signal	(A1) (A2) (A3)	• Ext. S-input / Ext. input • Color (colour) bar signal [NTSC] • S-VHS tape
Mode	(B)	• S-VHS • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• VIDEO OUT terminal (75Ω terminated)
Adjustment part	(F)	• VR1401 (D/A LEVEL ADJ) [3D DIGITAL/4M board]
Specified value (Note)	(G)	• 1.00 ± 0.015 Vp-p (reference value)

(1) Insert the cassette tape (A3) to enter the mode (B).
(2) Observe the VIDEO OUT waveform at the measuring point (D).
(3) Check the Y level value when the External S-input (Y/C separated video signal).
(4) Switch the input signal to the External input (composite video signal), and adjust the adjustment part (F) so that the Y level becomes the same value observed in step (3).

Note:

- ***The specified value (G) is just a reference value to be obtained when the External S-Video (Y/C separated video) signal is input. In actual adjustment, set it to the value observed in step (3).***

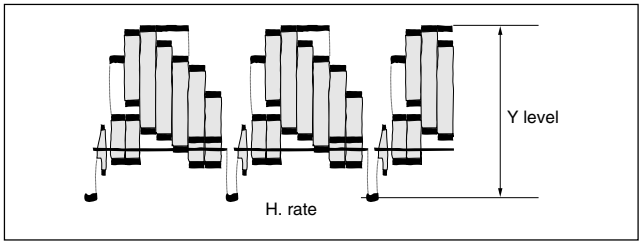


Fig. 3-3-1a D/A level

3.3.2 EE Y level

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B)	• EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
EVR mode	(F1)	• Jig RCU: Code “57”
EVR address	(F2)	• A:11 (Press remote controller “1” key twice)
Specified value	(G)	• 1.00 ± 0.03 Vp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Observe the Y OUT waveform at the measuring point (D).
(2) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(3) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(4) Adjust with the channel buttons (+, –) on the VCR (or on the remote controller) so that the Y level of the Y OUT waveform becomes the specified value (G).
(5) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

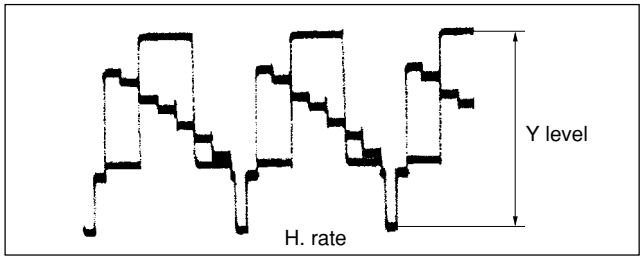


Fig. 3-3-2a EE Y level

3.3.3 PB Y level (S-VHS / VHS)

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• S-VHS SP • VHS SP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
EVR mode	(F1)	• Jig RCU: Code “57”
EVR address	(F2)	• A:11 (Press remote controller “1” key twice)
Specified value	(G)	• 1.00 ± 0.03 Vp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Observe the Y OUT waveform at the measuring point (D).
(2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(5) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(6) Adjust with the channel buttons (+, –) on the VCR (or on the remote controller) so that the Y level of the Y OUT waveform becomes the specified value (G).
(7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(8) Repeat steps (2) to (7) in the mode (B2).

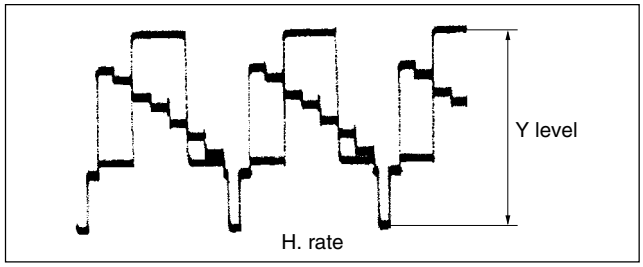


Fig. 3-3-3a PB Y level

3.3.4 REC color (colour) level

Signal	(A1)	• Alignment tape(S-VHS, SP/EP, Color(colour) bar) [MH-1H]
	(A2)	• Ext. input
	(A3)	• Color (colour) bar signal [NTSC]
Mode	(B1)	• S-VHS SP
	(B2)	• S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D1)	• TP106 (PB. FM)
	(D2)	• PB color (colour) output of the LPF
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig RCU: Code “57”
EVR address	(F2)	• A:02 (Press remote controller “0” and “2” keys)
Specified value	(G)	• SP: “B” x 125 ± 5% • EP: “B” x 125 ± 5%
Adjustment tool	(H1)	• Jig RCU [PTU94023B]
	(H2)	• Digit-key remote controller
	(H3)	• LPF [PTU93006] (See Fig. 3-3-4a.)

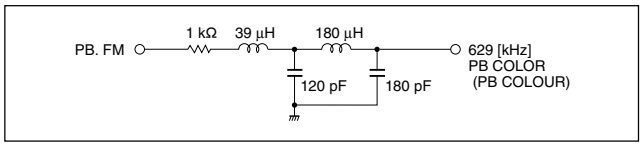


Fig. 3-3-4a LPF

(1) Connect the adjustment tool (H3) to the measuring point (D1).
(2) Apply the external trigger signal to D.FF (E) to observe the PB color (colour) waveform at the measuring point (D2).
(3) Play back the signal (A3) in the mode (B1) of the alignment tape (A1).
(4) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(5) Adjust tracking by pressing the channel buttons (+, –) so that the PB color (colour) waveform becomes maximum. Make a note of the higher PB color (colour) level as “B” at this time.
(6) Record the signal (A3) in the mode (B1), and play back the recorded signal.
(7) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(8) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(9) Adjust with the channel buttons (+, –) on the VCR (or on the remote controller) so that the higher level channel becomes the specified value (G) of the note "B" level as shown in Fig. 3-3-4b. (Adjust before recording, then confirm it by playing back.)
(10) After adjustment, record the signal (A3) then playing it back again. At this time, confirm that there is no inverting phenomenon or noise appearing on the playback screen.
(11) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(12) Repeat steps (3) to (11) in the mode (B2).

Note:

- ***After adjusting, always perform the confirmation and re-adjustment of the item 3.4.1.***

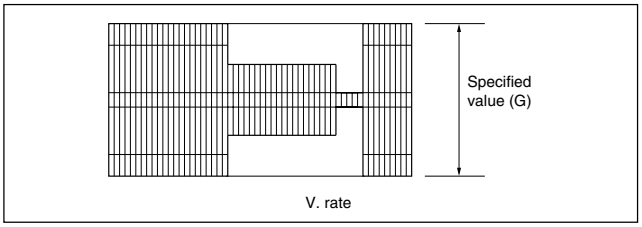


Fig. 3-3-4b REC color (colour) level

3.3.5 Video EQ (Frequency response)

Signal	(A1)	• Ext. S-input
	(A2)	• Video sweep signal
Mode	(B1)	• S-VHS SP
	(B2)	• S-VHS EP
	(B3)	• Picture Control / Smart Picture REC : Normal / Natural PB : Edit / Distinct
Equipment	(C)	• Oscilloscope
Measuring point	(D1)	• Y OUT terminal (75Ω terminated)
Frequency marker	(D2)	• 3 [MHz]
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig RCU: Code “57”
EVR address	(F2)	• A:03 (Press remote controller “0” and “3” keys)
Specified value	(G)	• SP: 3.2 ± 0.2 div. (–2 ± 0.5 dB) • EP: 2.8 ± 0.2 div. (–3 ± 0.5 dB)
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Apply the external trigger signal to D.FF (E) to observe the Y OUT waveform at the measuring point (D1).
(2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(5) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(6) Set the slope of the oscilloscope to the channel having higher (D2) marker level of the Y OUT waveform [signal (A2)]. Then set the 100 kHz marker level to the “4” scale on the oscilloscope. In this condition, adjust with the channel buttons (+, –) on the VCR (or on the remote controller) so that the (D2) marker level reaches the specified value (G).
(7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(8) Repeat steps (2) to (7) in the mode (B2).

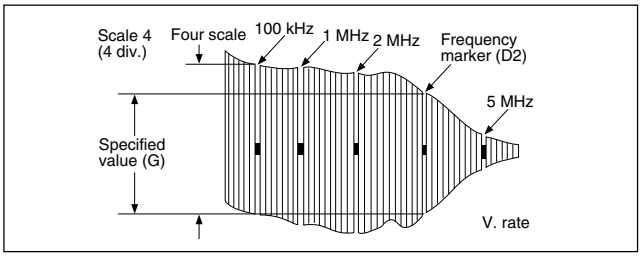


Fig. 3-3-5a Video EQ (Frequency Response)

3.3.6 AUTO PICTURE initial setting

Signal	(A1) (A2) (A3)	• Ext. input • Video: Optional • VHS tape
Mode	(B)	• EE → Auto adjust (SP/EP REC → PB)
Adjustment part	(F)	• Jig RCU : Code “58”
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Insert the cassette tape (A3).
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

3.4 AUDIO CIRCUIT

Notes:

- ***This adjustment should be done after the “REC color (colour) level adjustment” for the video circuit has been completed.***
- ***GND (Ground) should be taken from the Tuner shield case.***

3.4.1 Audio REC FM

Signal	(A1) (A2) (A3)	• Ext. input • Audio: No signal • Video: Color (colour) bar signal [NTSC]
Mode	(B)	• S-VHS EP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP2253 (A. FM)
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig RCU: Code “57”
EVR address	(F2)	• A: 30 (Press remote controller “3” and “0” keys.)
Specified value	(G1) (G2)	• 500 ± 100 mVp-p • More than 350 mVp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Apply the external trigger signal to D.FF (E) to observe the Audio PB FM waveform at the measuring point (D).
(2) Record the signal (A3) with no audio signal input in the mode (B), and play back the recorded signal.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) If the A.PB FM level is not within the specified value (G1), perform the adjustment in a following procedure.
(5) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(6) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(7) Adjust with the channel buttons (+, –) on the VCR (or on the remote controller) so that the A.PB FM level of the higher channel level becomes the specified value (G1). (Adjust before recording, then confirm it by playing back.)
(8) If the specified value (G1) is not obtained, adjust with the channel buttons (+, –) so that the waveform level of the lower channel level becomes the specified value (G2). (Adjust before recording, then confirm it by playing back.)
(9) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

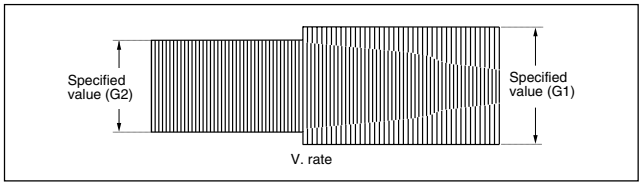


Fig. 3-4-1a Audio REC FM

3.5 DEMODULATOR CIRCUIT

Notes:

- ***Unless otherwise specified in this demod circuit adjustments, all measuring points and adjustment parts are located on the Demod board.***
- ***Unless otherwise specified,set an audio multiplex TV signal generator as follows;***
  RF signal : 70 dBμ / 75Ω, color bar 87.5% modulation.

3.5.1 Input level

Signal	(A)	• RF signal (Audio: mono 300 Hz)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 20 (Press remote controller “2” and “0” keys.)
Specified value	(G)	• 500 ± 10 mVrms
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Set an audio signal mode of the RF signal generator to mono 300 Hz.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.2 Stereo VCO

Signal	(A)	• No signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505(–) terminal
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 21 (Press remote controller “2” and “1” keys.)
Specified value	(G)	• 15.73 ± 0.1 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).

(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

3.5.3 Stereo filter

Signal	(A)	• RF signal (Audio: No signal)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 22 (Press remote controller “2” key twice.)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Set an audio signal mode of the RF signal generator to no signal.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.4 Separation - 1

Signal	(A)	• RF signal (Audio: L-ch 300 Hz 14% modulated)
Mode	(B)	• Tuner • EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 23 (Press remote controller “2” and “3” keys.)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 300 Hz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the level of the measuring point (D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.5 Separation - 2

Signal	(A)	• RF signal (Audio: L-ch 5 kHz 14% modulated)
Mode	(B)	• Tuner
		• EE
Equipment	(C)	• Audio level meter
Measuring point	(D)	• IC1501 pin 26
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 24 (Press remote controller “2” and “4” keys.)
Specified value	(G)	• Minimum level
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Set an audio signal mode of the RF signal generator to alternate L-ch 5 kHz 14% modulated.
(2) Connect the equipment (C) to the measuring point (D).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the level of the measuring point(D) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

3.5.6 SAP VCO

Signal	(A)	• No. signal
Mode	(B)	• Tuner • EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC1501 pin 26
Short point	(D2)	• C1505 (–) terminal
EVR mode	(F1)	• Jig RCU : Code “57”
EVR address	(F2)	• A : 25 (Press remote controller “2” and “5” keys.)
Specified value	(G)	• 78.67 ± 0.5 kHz
Adjustment tool	(H)	• Jig RCU [PTU94023B] • Digit-key remote controller

(1) Connect the short wire between the short point (D2) and the GND (Ground).
(2) Connect the equipment (C) to the measuring point (D1).
(3) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
(4) Set the EVR address to (F2) by pressing the button of the digit-key remote controller.
(5) Adjust with the channel buttons (+,–) on the VCR (or on the remote controller) so that the frequency of the measuring point (D1) becomes the specified value (G).
(6) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
(7) Disconnect the short wire between the short point (D2) and the GND (Ground).

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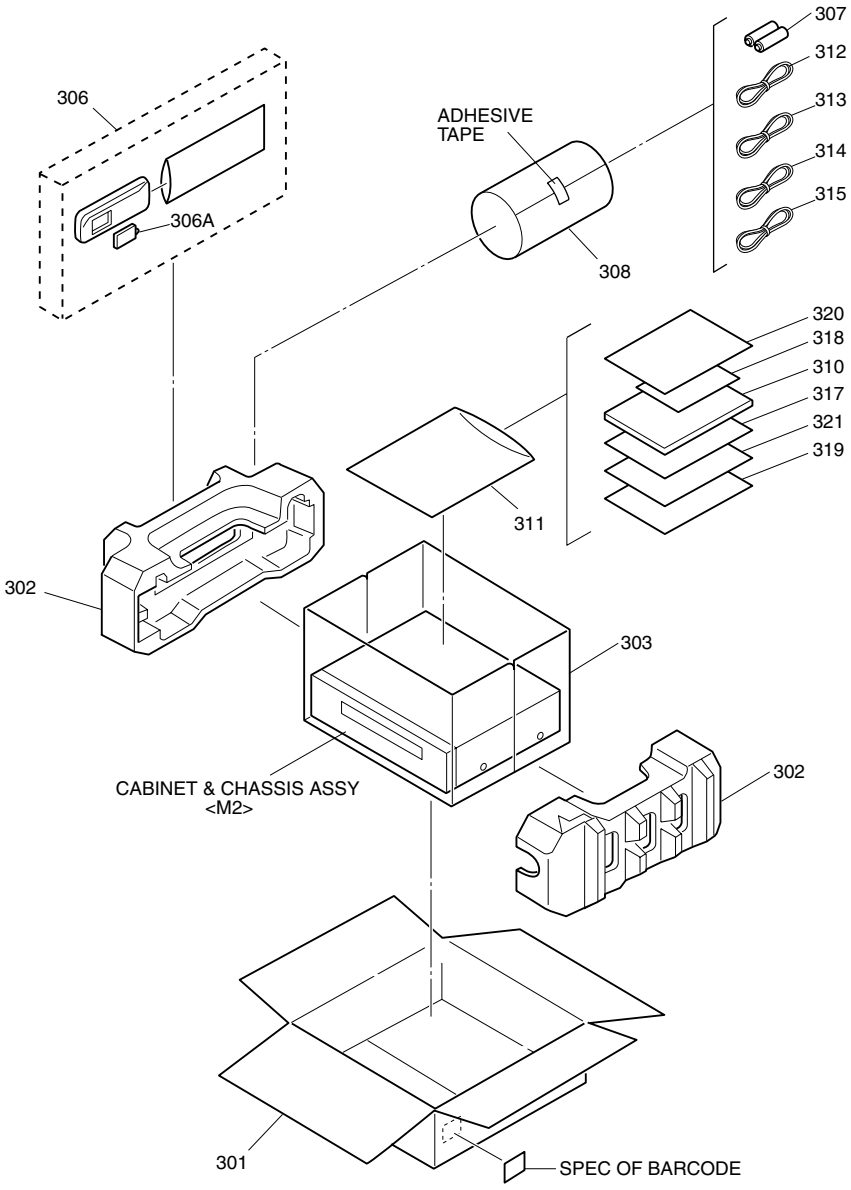
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

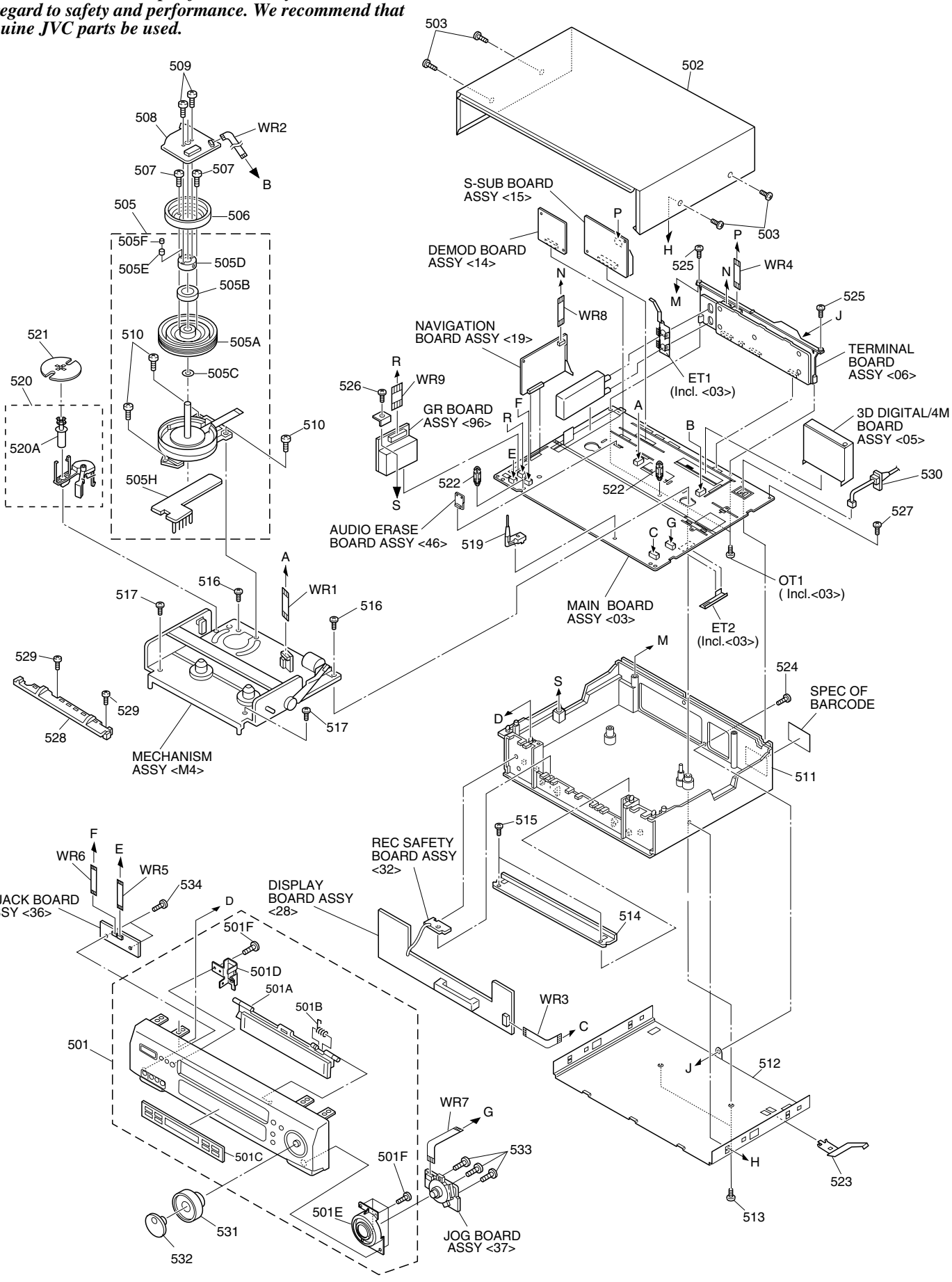
PACKING AND ACCESSORY ASSEMBLY <M1>

	301	LP30596-009B	PACKING CASE
	302	LP30605-002C	CUSHION ASSY
	303	PQM30021-95	POLY BAG
	306	LP20465-007A	REMOTE CONTROLLER
	306A	LP40254-003B	COVER(BATTERY)
	307	–	BATTERY,X2("AA"TYPE)
	308	QPC02202230P	POLY BAG
⚠	310	LPT0350-001A	INST.BOOK(EN)
⚠		LPT0350-003A	INST.BOOK(FR)
	311	QPC02503530P	POLY BAG
	312	PEAC0294-04	RF CABLE
	313	QAM0174-001	A/V CABLE
	314	QAL0095-004	LED CABLE ASSY(Controller)
	315	QAM0246-002	S CABLE
	317	LPT0350-002A	Q.S.SHEET
	318	LP40437-001A	LABEL(S VHS ET)
	319	BT-20071B	SER.NET CARD
	320	BT-51020-2	REGIST.CARD
	321	PU36560	CONECTION SHEET

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



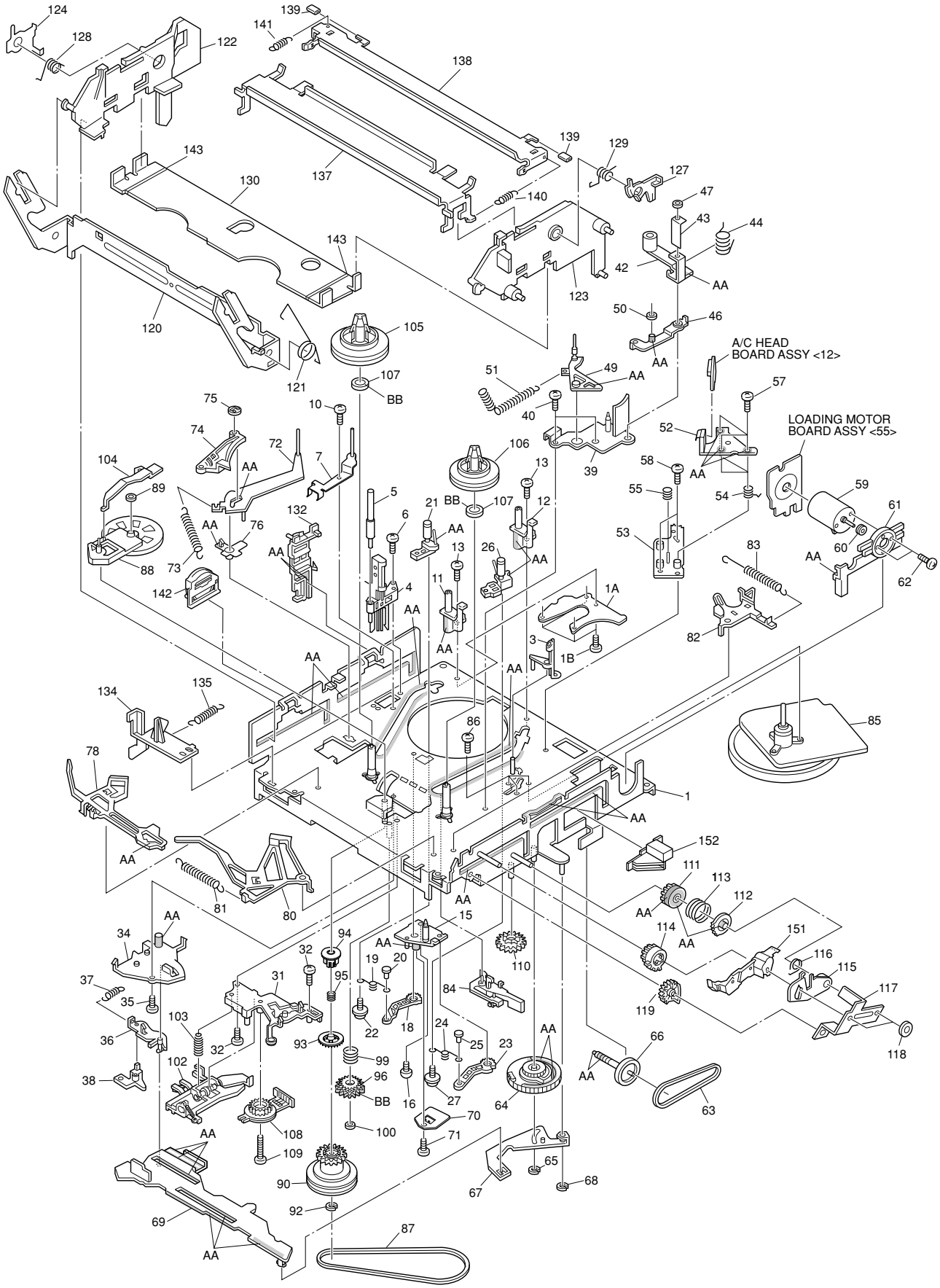
#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				

CABINET AND CHASSIS ASSEMBLY <M2>

⚠	501	LP10088-017B	FRONT PANEL ASSY
	501A	LP20716-006A	CASSETTE DOOR
	501B	PQ46448	TORSION SPRING
	501C	LP20250-007A	DISPLAY WINDOW
	501D	LP40159-001B	BRACKET(DAMPER)
	501E	LP20613-004A	ORNAMENT
	501F	SDSF2608Z	SCREW,X5
⚠	502	PQ11922-36-7	TOP COVER
	503	QYTDSF3010R	SCREW,X4 TOP COVER(SIDE)
	505	LP20319-019A	DRUM SUB ASSY
	505A	LP20030-019A	UPPER DRUM ASSY
	505B	PDM4439	CAP
	505C	PDM4444-19-2	WASHER
	505D	LP40572-001A	COLLAR ASSY
	505E	LP40323-001A	CONTACT
	505F	LP30004-014A	COMPRESSION SPRING
	505H	LPA20002-01C	SENSOR BOARD ASSY
	506	PDZ0179-2-4	ROTOR ASSY
	507	QYSPSP3006Z	SCREW,X2
⚠	508	QAR0119-001	STATOR ASSY
	509	QYSPSPH2606Z	SCREW,X2
	510	QYTDST2610Z	SCREW,X3 DRUM
⚠	511	LP10140-005F	BOTTOM CHASSIS
⚠	512	PQ11921-1-4	BOTTOM COVER
	513	QYTDSF3010Z	SCREW,X2
	514	LP30312-001B	BRACKET(CHASSIS)
	515	QYTDSF3010Z	SCREW,X2
	516	QYTDSF4012Z	SCREW,X2 MECHA
	517	QYTDSF3010Z	SCREW,X2 MECHA
	519	LP40407-001A	KNOB ASSY
	520	LP40370-001E	ROLLER ARM ASSY
	520A	PDM4311A-1	ROLLER ASSY
	521	PQ44230	INERTIA PLATE
	522	LP40226-001A	PC SUPPORT,X2
	523	LP40659-001A	EARTH PLATE(2)
	524	QYTDSF3010M	SCREW,TERMINAL
	525	QYTPSFG3010Z	SCREW,X2 TERMINAL
	526	QYTPSFG3010Z	SCREW,GR
	527	QYTDSF3010Z	SCREW,MAIN
	528	LP30247-001B	FRONT BRACKET
	529	QYTDST2606Z	SCREW,X2
⚠	530	QMPD190-170-K	POWER CORD
	531	LP30695-001A	KNOB(SHUTTLE)
	532	LP30694-001A	KNOB(JOG)
	533	QYTDSF2608Z	SCREW,X3 JOG
	534	QYTDSF2608Z	SCREW,X2 S JACK
	WR1	QUQ112-0720CG	FFC WIRE,A/C HEAD CN2001
	WR2	QUQ212-0518CG	FFC WIRE,DRUM CN3001
	WR3	QUQ112-1414CG	FFC WIRE,DISPLAY CN3011
	WR4	QUQ112-1407CG	FFC WIRE,S SUB CN911
	WR5	QUQ212-0516CG	FFC WIRE,JACK CN902
	WR6	QUQ212-0416CG	FFC WIRE,S(FSA)CN901
	WR7	QUQ112-0616CG	FFC WIRE,JOG(FSA)CN3012
	WR8	QUQ112-0826CG	FFC WIRE,NAVIGATION CN912
	WR9	QUQ112-1113CG	FFC WIRE,GR CN1901

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		1	LP20884-002D	MAIN DECK ASSY
		1A	LP40275-002B	PLATE(SUPPLY)
		1B	QYTDST2606Z	SCREW,X4
		3	LP30492-002B	GIDE POOL GUARD
		4	NAH0001-001	FULL ERASE HEAD
		5	LP40098-001B	GUIDE POLE(SUPPLY)
		6	QYTDST2608Z	SCREW
		7	LP40678-001A	TENSION STUD BASE ASSY
		10	QYTDST2606Z	SCREW
		11	LP30409-002C	UV CATCHER 2
		12	LP30409-002C	UV CATCHER 2
		13	QYTPST2606Z	SCREW,X2
		15	LP30223-003C	LOADING ARM GEAR SHAFT
		16	QYTDST2606Z	SCREW
		18	LP30224-001A	LOADING ARM GEAR(SUPPLY)
		19	LP40099-001A	TORSION ARM
		20	LP40100-001A	PIN
		21	LP40101-007A	POLE BASE ASSY(SUPPLY)
		22	QYSPSTG2606Z	SCREW
		23	LP40103-002B	LOADING ARM GEAR(TAKE UP)
		24	LP40099-001A	TORSION ARM
		25	LP40100-001A	PIN
		26	LP40104-008A	POLE BASE ASSY(TAKE UP)
		27	QYSPSTG2606Z	SCREW
		31	LP20233-004B	ROTARY ENCODER GUIDE
		32	QYTPST2606Z	SCREW
		34	LP30226-004C	CONTROL PLATE GUIDE
		35	QYTPST2605Z	SCREW
		36	LP30249-003B	TAKE UP LEVER
		37	LP30003-006A	TENSION SPRING
		38	LP40119-002A	TAKE UP HEAD
		39	LP20234-004B	LID GUIDE
		40	QYTDST2606Z	SCREW,X2
		42	LP40105-001B	PINCH ROLLER ARM ASSY
		43	LP40478-001A	PINCH ROLLER SHEET2
		44	LP40148-002A	TORSION SPRING
		46	LP40149-001C	PRESS LEVER ASSY
		47	LP30016-002A	SLIT WASHER
		49	LP40106-002E	GUIDE ARM ASSY
		50	LP30017-008A	SPACER
		51	LP40134-001C	TENSION SPRING
		52	QAH0010-004	AC HEAD
		53	LP30228-001A	HEAD BASE
		54	LP30004-013A	COMPRESSION SPRING,X3
		55	LP40236-001A	COMPRESSION SPRING
		57	LP40213-002B	SPECIAL SCREW,X3
		58	QYTDST2608Z	SCREW,X2
		59	QAR0023-001	LOADING MOTOR
		60	PQ43546-1-2	MOTOR PULLEY
		61	LP30230-001B	MOTOR GUIDE
		62	QYTPSP3003Z	SCREW,X2
		63	LP30005-003A	BELT,LOADING MOTOR
		64	LP20791-002C	CONTROL CAM
		65	PQM30017-24	SLIT WASHER
		66	LP40120-001A	WORM GEAR
		67	LP40107-002A	LINK LEVER ASSY
		68	PQM30017-24	SLIT WASHER
		69	LP10284-002E	CONTROL PLATE
		70	LP40379-001B	CONTROL BRACKET(1)
		71	QYTDSF2608M	SCREW
		72	LP40108-002A	TENSION ARM ASSY
		73	LP30003-010A	TENSION SPRING
		74	LP40109-003D	TENSION BRAKE ASSY
		75	PQ46302-1-3	ADJUST PIN
		76	LP30232-002A	TENSION ARM BEARING
		78	LP40532-009A	MAIN BRAKE ASSY (SUPPLY)
		80	LP40111-012B	MAIN BRAKE AY (TAKE UP)
		81	LP30003-029A	TENSION SPRING
		82	LP40112-001F	SUB BRAKE ASSY(TAKE UP)
		83	LP40357-001B	TENSION SPRING
		84	LP40461-001A	CAPSTAN BRAKE ASSY
		85	QAR0132-001	CAPSTAN MOTOR
		86	QYTDSF2606M	SCREW,X3
		87	LP30005-008A	BELT,CAPSTAN MOTOR
		88	LP40114-011A	IDLER ARM ASSY
		89	LP30016-001A	SLIT WASHER
		90	LP40593-003A	CLUTCH UNIT 3
		92	PQM30017-47	SLIT WASHER
		93	LP30696-002A	CLUTCH GEAR 4
		94	LP30697-002A	COUPLING GEAR
		95	LP40554-002A	COMPRESSION SPRING
		96	LP40442-001A	DIRECT GEAR
		99	LP40483-002A	COMPRESSION SPRING
		100	LP30016-001A	SLIT WASHER
		102	LP40484-001H	CHANGE LEVER ASSY
		103	LP40512-002B	COMPRESSION SPRING
		104	LP30236-002B	IDLER LEVER
		105	LP40420-001A	REEL DISK ASSY(SUPPLY)
		106	LP40421-001A	REEL DISK ASSY(TAKE UP)
		107	LP30017-015A	SPACER,X2
		108	QSW0554-003	ROTARY ENCODER
		109	QYTPST2620Z	SCREW
		110	LP30237-002B	CASSETTE GEAR
		111	LP30239-002G	LIMIT GEAR(1)
		112	LP30240-002G	LIMIT GEAR(2)
		113	LP40136-001E	TORSION SPRING
		114	LP30242-002A	RELAY GEAR
		115	LP30339-002E	OPENER GUIDE
		116	LP40545-001A	TORSION SPRING
		117	LP40214-001B	C.H.BRACKET
		118	PQM30017-47	SLIT WASHER,X2
		119	LP30243-001D	DRIVE GEAR
		120	LP20240-001D	DRIVE ARM
		121	LP40137-001A	TORSION SPRING
		122	LP10081-002L	SIDE HOLDER(L)
		123	LP10082-002M	SIDE HOLDER(R)
		124	LP30255-006A	LOCK LEVER(L)
		127	LP30256-001H	LOCK LEVER(R)
		128	LP40168-001A	TORSION SPRING(L)
		129	LP40218-001B	TORSION SPRING(R)
		130	LP30257-001F	CASSETTE HOLDER
		132	LP30244-002G	GUIDE RAIL
		134	LP30245-002E	REC SAFETY LEVER
		135	LP30003-004A	TENSION SPRING
		137	LP20578-001C	TOP GUIDE
		138	LP30500-001C	HOLD PLATE
		139	LP40450-003A	PAD,X2
		140	LP30003-025B	TENSION SPRING
		141	LP30003-024A	TENSION SPRING
		142	LP40481-003A	ROLLER CAM ASSY
		143	LP30019-014A	PAD,X2
		151	LP20324-003A	DOOR OPENER
		152	LP30493-001A	START SENSOR CAP

5.4 ELECTRICAL PARTS LIST

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				
			MAIN BOARD ASSEMBLY <03>	
		PW1	LPA10106-51B1	MAIN BOARD ASSY
		IC1	JCP8022-NSD	IC
		IC2501	LC85405JE	IC
		IC3001	HD6432194AA06F	IC(MCU)
		IC3002	S-80727AN-DQ-X	IC
			or S-80827ANUP-W	IC
		IC3003	AT24C08-10PC	IC
			or BR24C08	IC
			or M24C08-BN6	IC
			or S-24C08ADP	IC
			or 24LC08B/P	IC
		IC3004	BA6956AN	IC
		IC3501	BA6956AN	IC
		IC3601	BU2090FS	IC
		IC3651	BU2090FS	IC
		IC5101	STR-G6532	IC
		IC5301	LA5644	IC
		Q5	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q7	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q8	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q9	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q12	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q17	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q21	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q24	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q38	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q401	2SA1576A/QR/-X	TRANSISTOR
		Q402	2SA1576A/QR/-X	TRANSISTOR
		Q403	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q404	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q405	2SA1576A/QR/-X	TRANSISTOR
		Q2001	2SC4081/QRS/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q2002	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2003	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q2004	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q2052	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
		Q2053	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q2054	2SA1576A/QR/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q2061	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2062	2SA1576A/QR/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q2102	DTC114EU	TRANSISTOR
			or PDTC114EU	TRANSISTOR
			or RN1302	TRANSISTOR
			or UN5211	TRANSISTOR
		Q2103	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2104	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q2105	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q2108	2SC4081/QRS/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q2251	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q2501	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2502	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q3001	2SD1819A/QRS/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q3002	PTZ-NV16	PHOTO TRANSISTOR
			or PTZ-NV16A	PHOTO TRANSISTOR
		Q3003	PTZ-NV16	PHOTO TRANSISTOR
			or PTZ-NV16A	PHOTO TRANSISTOR
		Q3004	2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
		Q3005	2SD1819A/QRS/-X	TRANSISTOR

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q3009	UN521E	TRANSISTOR
			or DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
		Q3501	2SD1819A/QRS/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q4001	UN5211	TRANSISTOR
			or RN1302	TRANSISTOR
			or DTC114EU	TRANSISTOR
			or PDTC114EU	TRANSISTOR
		Q4003	UN5211	TRANSISTOR
			or DTC114EU	TRANSISTOR
			or PDTC114EU	TRANSISTOR
			or RN1302	TRANSISTOR
		Q5301	2SB1256	TRANSISTOR
		Q5302	DTC114TU	TRANSISTOR
			or PDTC114TU	TRANSISTOR
			or UN5215	TRANSISTOR
			or RN1311	TRANSISTOR
		Q5320	2SB1256	TRANSISTOR
		Q5321	DTC114TU	TRANSISTOR
			or PDTC114TU	TRANSISTOR
			or RN1311	TRANSISTOR
			or UN5215	TRANSISTOR
		Q5322	DTA114EU	TRANSISTOR
			or PDTA114EU	TRANSISTOR
			or RN2302	TRANSISTOR
			or UN5111	TRANSISTOR
		Q6501	DTC143TU	TRANSISTOR
		Q6502	DTC143TU	TRANSISTOR
		Q6551	2SC1740S/QRS/-T	TRANSISTOR
			or 2SC3199/YG/-T	TRANSISTOR
		Q7201	2SC1317/RS/-T	TRANSISTOR
		D2001	1SS355	DIODE
		D2121	MTZJ8.2C	ZENER DIODE
		D2201	11ES2	DIODE
			or 1A3G	DIODE
		D2501	1SS133	DIODE
		D3001	LNB2301L01VI	LE DIODE
		D3002	1SS133	DIODE
		D3003	RD39ES/B3/-T2	ZENER DIODE
			or MTZJ39C	ZENER DIODE
		D3004	11E2-T5	DIODE
		D3005	11E2-T5	DIODE
		D3007	1SS355	DIODE
		D4001	1SS355	DIODE
		D4002	1SS355	DIODE
		D5001	S1WB/A/60-4102	BRIDGE DIODE
			or S1WB/A/60-X	BRIDGE DIODE
			or S1WB(A)60F4072X	BRIDGE DIODE
		D5101	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 10ELS4	FR DIODE
			or 1SR153-400-T2	FR DIODE
		D5102	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS4	FR DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		D5103	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or 10ELS2	FR DIODE	
			or PG104RS	FR DIODE	
		D5201	AK04	DIODE	
			or 1S4	SB DIODE	
			or 11EQS04	SB DIODE	
		D5202	FML-12S	FR DIODE	
			or FCF06A20	FR DIODE	
			or ER602FCT	FR DIODE	
			or YG901C2	FR DIODE	
			or SF5LC20U	FR DIODE	
		D5206	FMB-24	BARRIER DIODE	
			or FSQ05A04B	SB DIODE	
			or SB640FCT	SB DIODE	
			or SF5SC4	SB DIODE	
			or YG801C04	SB DIODE	
		D5209	ERA18-02-T2	FR DIODE	
			or PG104RS	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or 10ELS2	FR DIODE	
		D5210	AU01Z	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or PG104RS	FR DIODE	
			or 10ELS2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
		D5211	AU01Z	FR DIODE	
			or PG104RS	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
			or ERA18-02-T2	FR DIODE	
			or 10ELS2	FR DIODE	
		D5214	ERA18-02-T2	FR DIODE	
			or PG104RS	FR DIODE	
			or 10ELS2	FR DIODE	
			or 1SR153-400-T2	FR DIODE	
		D5301	MTZJ15A	ZENER DIODE	
			or RD15ES/B1/-T2	ZENER DIODE	
		D5302	MTZJ6.8A	ZENER DIODE	
			or RD6.8ES/B1/-T2	ZENER DIODE	
		D5303	MTZJ27C	ZENER DIODE	
			or RD27ES/B3/-T2	ZENER DIODE	
		D5304	1SS133	DIODE	
			or 1SS270A	DIODE	
		D5305	11ES2	DIODE	
			or 1A3G	DIODE	
			or ERA15-02-T2	DIODE	
		D5314	11ES2	DIODE	
			or 1A3G	DIODE	
			or ERA15-02-T2	DIODE	
		D5315	11ES2	DIODE	
			or 1A3G	DIODE	
			or ERA15-02-T2	DIODE	
		D6002	HZ30-2L-T2	ZENER DIODE	
			or HZ30-2LTD	Z DIODE (M)	
		D6551	MTZJ10B	ZENER DIODE	
		R1	NRVA02D-622X	CMF RESISTOR	6.2kΩ,1/10W
		R2	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
		R3	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R5	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R7	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R8	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R9	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R23	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R25	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R26	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		R27	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R28	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R29	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R30	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R31	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R32	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R34	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R36	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R39	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R42	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R44	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R45	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R46	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R48	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R51	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R68	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R70	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R77	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R88	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R90	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R92	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R93	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R94	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R104	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R113	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R114	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R401	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R402	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R403	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R404	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R405	NRSA02J-683X	MG RESISTOR	68kΩ,1/10W
		R407	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R408	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R409	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2001	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2003	QRE141J-101Y	RESISTOR	100Ω,1/4W
		R2005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R2006	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R2007	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2009	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2010	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2011	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2013	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2014	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R2015	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R2016	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2017	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2020	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2056	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2061	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R2062	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		R2063	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
		R2064	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2065	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2102	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R2103	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2104	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2105	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R2106	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R2107	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2109	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2111	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R2121	QRE141J-151Y	RESISTOR	150Ω,1/4W
		R2202	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R2203	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R2204	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2205	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2206	QRE141J-101Y	RESISTOR	100Ω,1/4W
		R2210	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2211	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2213	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R2215	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2217	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2218	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2219	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R2220	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R2223	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2224	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2225	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2228	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2251	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2501	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2502	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2503	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R2504	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2505	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R2506	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2507	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2508	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R2509	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2510	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
		R2511	NRSA02J-154X	MG RESISTOR	150kΩ,1/10W
		R2512	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2513	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2514	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R2519	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2520	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2522	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R3011	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3012	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3013	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3016	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3017	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3018	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
		R3019	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3022	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3025	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3026	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R3027	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3029	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3030	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3031	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3032	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3038	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R3040	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3041	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3042	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3044	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3046	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3047	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3048	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3049	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3050	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3051	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3052	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3053	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3054	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3055	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3056	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3057	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3059	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3060	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3061	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3062	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3063	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3066	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3069	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3071	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3072	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3073	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3075	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3076	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3078	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3083	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3085	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3086	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3087	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3088	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3089	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3090	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3091	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3094	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3095	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3096	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R3097	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3103	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3105	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3106	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3201	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3202	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3204	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R3205	QRE141J-181Y	RESISTOR	180Ω,1/4W
		R3206	QRE141J-183Y	RESISTOR	18kΩ,1/4W
		R3207	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3208	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3209	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3210	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3211	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3212	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R3213	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R3214	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3217	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R3218	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R3219	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3220	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
		R3222	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3223	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3224	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3225	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3229	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R3230	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3231	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3233	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3234	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3235	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3236	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3237	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3238	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R3239	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3241	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
		R3242	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3244	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3247	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3251	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3501	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R3502	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R3503	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R3504	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R3505	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R3506	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R3671	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3672	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3673	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4001	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R4003	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4004	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4005	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R4007	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4008	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4009	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4010	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4011	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4012	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4013	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4014	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R4015	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R4016	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4017	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4018	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4019	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
	⚠	R5001	QRZ9046-475Z	RESISTOR	4.7MΩ,1/2W
		R5101	QRG02GJ-104	OMF RESISTOR	100kΩ,2W
		R5102	QRE141J-820Y	RESISTOR	82Ω,1/4W
		R5103	NRSA02J-681X	MG RESISTOR	680Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
		R5105	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R5106	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R5301	QRE141J-1R0Y	RESISTOR	1Ω,1/4W
		R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
	⚠	R5304	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
		R5305	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5306	NRSA02J-683X	MG RESISTOR	68kΩ,1/10W
		R5308	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R5309	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R5327	NRVA02D-303X	CMF RESISTOR	30kΩ,1/10W
		R5330	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R5332	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R5334	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R5335	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R5336	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R6020	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6021	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6022	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6031	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6032	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R6050	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6053	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6061	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R6508	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6510	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6551	QRE141J-271Y	RESISTOR	270Ω,1/4W
		R6552	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6553	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R6554	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R7202	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R7203	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7204	QRE121J-100Y	RESISTOR	10Ω,1/2W
		C1	NCF21CZ-105X	CAPACITOR	1μF,16V
		C2	NCF21CZ-105X	CAPACITOR	1μF,16V
		C3	NCF21CZ-105X	CAPACITOR	1μF,16V
		C4	NCF21CZ-105X	CAPACITOR	1μF,16V
		C5	QEKC0JM-476	E CAPACITOR	47μF,6.3V
		C6	NCB11EK-104X	CAPACITOR	0.1μF,25V
		C7	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C8	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C9	QETN1HM-225	E CAPACITOR	2.2μF,50V
		C10	NDC21HG-151X	CAPACITOR	150pF,50V
		C11	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C12	NDC21HJ-120X	CAPACITOR	12pF,50V
		C14	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C15	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C16	NCB11EK-104X	CAPACITOR	0.1μF,25V
		C17	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C19	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C20	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C21	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C22	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C23	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C24	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C25	NDC21HJ-4R0X	CAPACITOR	4pF,50V
		C26	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C27	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C28	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C29	NCB21HK-472X	CAPACITOR	0.0047μF,50V
		C30	NCB21CK-474X	CAPACITOR	0.47μF,16V
		C31	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C32	QCFB1HZ-104	CAPACITOR	0.1μF,50V
		C33	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C34	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C35	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C36	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C37	NCB21AK-105X	CAPACITOR	1μF,10V
		C38	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C39	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C40	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C54	NDC21HJ-221X	CAPACITOR	220pF,50V
		C59	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C60	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C61	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C63	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C64	NDC21HJ-120X	CAPACITOR	12pF,50V
		C71	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C72	NDC21HJ-470X	CAPACITOR	47pF,50V
		C73	NDC21HJ-120X	CAPACITOR	12pF,50V
		C74	NDC21HJ-120X	CAPACITOR	12pF,50V
		C80	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C84	NDC21HJ-220X	CAPACITOR	22pF,50V
		C94	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C106	NDC21HJ-560X	CAPACITOR	56pF,50V
		C108	NDC21HJ-150X	CAPACITOR	15pF,50V
		C109	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C110	NCB21HK-331X	CAPACITOR	330pF,50V
		C401	NCB21EK-103X	CAPACITOR	0.01μF,25V
		C402	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C403	NDC21HJ-151X	CAPACITOR	150pF,50V
		C404	NDC21HJ-180X	CAPACITOR	18pF,50V
		C405	NDC21HJ-220X	CAPACITOR	22pF,50V
		C406	NDC21HJ-681X	CAPACITOR	680pF,50V
		C407	NDC21HJ-150X	CAPACITOR	15pF,50V
		C2001	QETN1HM-475	E CAPACITOR	4.7μF,50V
		C2002	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2003	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C2004	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2005	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2006	NCB21HK-123X	CAPACITOR	0.012μF,50V
		C2007	QEKJ1CM-226	E CAPACITOR	22μF,16V
		C2008	QERF1EM-475	E CAPACITOR	4.7μF,25V
		C2009	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C2010	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C2011	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2012	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2051	NCB21HK-331X	CAPACITOR	330pF,50V
		C2061	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
		C2062	NCB21HK-332X	CAPACITOR	0.0033μF,50V
		C2063	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2064	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2101	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2102	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2104	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C2202	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C2203	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2204	QDGB1HK-102Y	CAPACITOR	0.001μF,50V
		C2205	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C2206	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C2207	QEKJ1CM-476	E CAPACITOR	47μF,16V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C2208	QETN1HM-475	E CAPACITOR	4.7µF,50V
		C2209	QERF1HM-104	E CAPACITOR	0.1µF,50V
		C2210	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C2211	QERF1HM-105	E CAPACITOR	1µF,50V
		C2212	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C2215	QERF1EM-475	E CAPACITOR	4.7µF,25V
		C2216	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2217	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2218	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2219	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2220	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2221	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2222	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2223	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2224	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2225	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2226	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2227	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2229	NDC21HJ-101X	CAPACITOR	100pF,50V
		C2230	NDC21HJ-101X	CAPACITOR	100pF,50V
		C2231	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2251	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C2252	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2253	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2254	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2256	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C2501	QERF0JM-107	E CAPACITOR	100µF,6.3V
		C2502	NCB21HK-562X	CAPACITOR	0.0056µF,50V
		C2503	QERF1HM-105	E CAPACITOR	1µF,50V
		C2505	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C2506	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2507	QERF1CM-226	E CAPACITOR	22µF,16V
		C2508	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2509	QERF1CM-106	E CAPACITOR	10µF,16V
		C2510	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C2511	NCB21HK-222X	CAPACITOR	0.0022µF,50V
		C2512	NDC21HJ-331X	CAPACITOR	330pF,50V
		C2513	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2518	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2519	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2520	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3001	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3002	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3003	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C3004	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3008	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3011	QETL0JM-478	E CAPACITOR	4700µF,6.3V
		C3012	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C3015	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3016	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3022	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3024	NDC21HJ-120X	CAPACITOR	12pF,50V
		C3026	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3027	NBE20JM-106X	T CAPACITOR	10µF,6.3V
		C3030	NBE20JM-226X	T CAPACITOR	22µF,6.3V
		C3031	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C3032	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3033	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3036	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3037	NDC21HJ-120X	CAPACITOR	12pF,50V
		C3040	QCFB1HZ-104	CAPACITOR	0.1µF,50V
		C3041	NDC21HJ-100X	CAPACITOR	10pF,50V
		C3042	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C3501	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3502	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C3503	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3602	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3652	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4002	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4003	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4004	NBE20JM-226X	T CAPACITOR	22µF,6.3V
		C4006	NBE40JM-476X	T CAPACITOR	47µF,6.3V
		C4007	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4008	NCB21AK-105X	CAPACITOR	1µF,10V
		C4009	NCB21HK-563X	CAPACITOR	0.056µF,50V
		C4010	NCB21EK-223X	CAPACITOR	0.022µF,25V
		C4011	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4012	NCB21EK-224X	CAPACITOR	0.22µF,25V
		C4013	NCB21HK-563X	CAPACITOR	0.056µF,50V
		C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4015	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4017	NCB21HK-222X	CAPACITOR	0.0022µF,50V
	⚠	C5001	QFZ9073-683	F CAPACITOR	0.068µF,250V
	⚠	C5004	QCZ9094-472	CAPACITOR	0.0047µF,250V
		C5006	QETM2DM-157	E CAPACITOR	150µF,200V
		C5101	QCZ0212-472	CAPACITOR	0.0047µF,1kV
		C5102	QEMU1VM-276	E CAPACITOR	27µF,35V
		C5103	QCZ0136-101Z	CAPACITOR	100pF,1kV
		C5104	QFLC1HJ-471Z	F CAPACITOR	470pF,50V
		C5107	QCZ0136-101Z	CAPACITOR	100pF,1kV
		C5201	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5202	QEMT1CM-827	E CAPACITOR	820µF,16V
		C5203	QEMT1AM-158	E CAPACITOR	1500µF,10V
		C5204	QETN2AM-475	E CAPACITOR	4.7µF,100V
		C5205	QETN1HM-106	E CAPACITOR	10µF,50V
		C5206	QEMU1EM-187	E CAPACITOR	180µF,25V
		C5207	QETN1CM-227	E CAPACITOR	220µF,16V
		C5208	QETN1AM-227	E CAPACITOR	220µF,10V
		C5212	QEMU1VM-127	E CAPACITOR	120µF,35V
		C5213	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5301	QETM0JM-108	E CAPACITOR	1000µF,6.3V
		C5302	QETN1HM-106	E CAPACITOR	10µF,50V
		C5303	QETN1CM-107	E CAPACITOR	100µF,16V
		C5304	QFVF1HJ-274Z	F CAPACITOR	0.27µF,50V
		C5305	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C6054	NDC21HJ-220X	CAPACITOR	22pF,50V
		C6055	NDC21HJ-220X	CAPACITOR	22pF,50V
		C7202	QETJ0JM-477	E CAPACITOR	470µF,6.3V
		L1	QQL29BJ-100Z	COIL	10µH
		L2	QQL231J-680Y	COIL	68µH
		L3	QQL29BJ-100Z	COIL	10µH
		L4	QQL29BJ-100Z	COIL	10µH
		L5	QQL29BJ-100Z	COIL	10µH
		L11	QQL01BJ-120Z	COIL	12µH
		L13	QQL231J-101Y	COIL	100µH
		L15	QQL29BJ-100Z	COIL	10µH
		L19	QQL231J-100Y	COIL	10µH
		L24	QQL231J-180Y	COIL	18µH
		L27	QQL231J-151Y	COIL	150µH
		L28	QQL231J-150Y	COIL	15µH
		L401	QQL071J-150Y	COIL	15µH
		L2251	QQL29BJ-100Z	COIL	10µH

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		L2501	QQL29BJ-2R2Z	COIL	2.2µH
		L5201	PELN1184	COIL	33µH
		L5202	PU60944-330K	COIL	33µH
		L6031	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		L7201	QQL01BJ-101Z	COIL	100µH
		LPF2501	PELN1137	LOW PASS FILTER	
		CF2501	QAX0399-001Z	RESONATOR	
		LC2501	QQL29BJ-100Z	COIL	10µH
		X2	QAX0575-001	CRYSTAL RESONATOR	
		X3001	QAX0444-001	CRYSTAL RESONATOR	
		X3002	QAX0527-001	CRYSTAL RESONATOR	
		S3002	QSW0695-001	PUSH SWITCH,S CASS SW	
		K2251	NQR0007-001X	FERRITE BEAD	
		K2252	NQR0007-001X	FERRITE BEAD	
		K2253	NQR0007-001X	FERRITE BEAD	
		K5101	QQR0678-001Z	FERRITE BEAD	
		K5102	QQR0678-001Z	FERRITE BEAD	
		PC3001	GP3S123	IC(PHOTO SENSOR)	
		PC3002	GP3S123	IC(PHOTO SENSOR)	
	⚠	PC5101	PC817	IC(PHOTO COUPLER)	
		T2052	PELN0861	OSC TRANSFORMER	
	⚠	T5001	QQS0057-001	SW TRANSFORMER	
		TU6001	QAU0163-001	TUNER	
		ET1	PQ21623-1-5	EARTH PLATE(RF)	
		ET2	LP40658-001A	EARTH PLATE(1)	
		HS1	LP40621-001A	HEAT SINK,IC5101	
		SD1	LP30720-001A	SHIELD CASE(PRE/REC)	
		OT1	QYTDSF3010Z	SCREW,X2 TERMINAL	
		OT2	PU59915-105	#500SPACER0.01,WR9	
		OT3	QYTDST3008Z	SCREW,IC5101	
		WR9	QUB371-09A2A2	SIN TWIST WIRE	
		FC5001	QNG0006-001Z	FUSE CLIP,F5001	
		FC5002	QNG0006-001Z	FUSE CLIP,F5001	
	⚠	LF5002	QQR0532-001	LINE FILTER	
	⚠	SG5001	QAF0046-242Z	SURGE ABSORBER	
	⚠	VA5001	QAF0039-431Z	VARISTOR	
	⚠	VA5002	QAF0039-431Z	VARISTOR	
		CN1	QGF1028C1-13	FPC CONNECTOR,(4-16)U.DRUM	
		CN901	QGF1207C1-04	FPC CONNECTOR,(1-4)FRONT S IN	
		CN902	QGF1207C1-05	FPC CONNECTOR,(1-5)FRONT IN	
		CN903	QGB2024K1-12S	CONNECTOR,(1-12)TERMINAL	
		CN904	QGB2024K1-12S	CONNECTOR,(1-12)TERMINAL	
		CN905	QGB2024K1-05S	CONNECTOR,(1-5)TERMINAL	
		CN907	QGB2024K1-10S	CONNECTOR,(1-10)TERMINAL	
		CN1901	QGF1207C1-11	FPC CONNECTOR,(1-11)GR	
		CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
		CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
		CN2051	QGB2024K1-04S	CONNECTOR,(1-4)AUDIO ERASE	
		CN3001	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
		CN3002	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
		CN3003	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
		CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
		CN3011	QGF1207C1-14	FPC CONNECTOR,(1-14)FRONT	
		CN3012	QGF1207C1-06	FPC CONNECTOR,(1-6)JOG	
		CN3501	QGB2011L2-06	CONNECTOR,(1-6)DD MDA	
	⚠	CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN	
	⚠	CP4001	ICP-N25	CIRCUIT PROTECTOR	
	⚠	CP5301	ICP-N38	CIRCUIT PROTECTOR	
	⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR	
	⚠	F5001	QMF51N2-1R25J1	FUSE	T1.25A,AC250V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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3D DIGITAL/4M BOARD ASSEMBLY <05>

		PW1	LPA10104-01B	3D DIGITAL/4M BOARD ASSY
		IC1401	JCP8026	IC
		IC1402	MN47V77S-XE	IC
		Q1401	2SC1317/RS/-T	TRANSISTOR
		Q1402	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1403	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1404	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or UN521E	TRANSISTOR
			or RN1309	TRANSISTOR
		Q1406	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1407	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1408	2SC4081/S/-X	TRANSISTOR
		Q1410	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q1412	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q1413	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1414	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q1417	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1418	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q1419	DTC124TU	TRANSISTOR
		D1401	RD4.3ES/B2/-T2	ZENER DIODE
			or MTZJ4.3B	ZENER DIODE
		D1402	1SS133	DIODE
			or 1N4148M	DIODE
		R1401	NRSA02J-271X	MG RESISTOR 270Ω,1/10W
		R1402	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
		R1404	NRSA02J-182X	MG RESISTOR 1.8kΩ,1/10W
		R1406	NRSA02J-471X	MG RESISTOR 470Ω,1/10W
		R1407	NRSA02J-272X	MG RESISTOR 2.7kΩ,1/10W
		R1410	NRSA02J-241X	MG RESISTOR 240Ω,1/10W
		R1411	NRSA02J-152X	MG RESISTOR 1.5kΩ,1/10W
		R1413	NRSA02J-471X	MG RESISTOR 470Ω,1/10W
		R1414	NRSA02J-821X	MG RESISTOR 820Ω,1/10W
		R1415	NRSA02J-221X	MG RESISTOR 220Ω,1/10W
		R1416	NRSA02J-104X	MG RESISTOR 100kΩ,1/10W
		R1417	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
		R1418	NRSA02J-471X	MG RESISTOR 470Ω,1/10W
		R1421	NRSA02J-331X	MG RESISTOR 330Ω,1/10W
		R1426	NRSA02J-821X	MG RESISTOR 820Ω,1/10W
		R1427	NRSA02J-333X	MG RESISTOR 33kΩ,1/10W
		R1428	NRSA02J-393X	MG RESISTOR 39kΩ,1/10W
		R1429	NRSA02J-152X	MG RESISTOR 1.5kΩ,1/10W
		R1430	NRSA02J-222X	MG RESISTOR 2.2kΩ,1/10W
		R1431	NRSA02J-821X	MG RESISTOR 820Ω,1/10W
		R1432	NRSA02J-182X	MG RESISTOR 1.8kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1433	NRSA02J-510X	MG RESISTOR	51Ω,1/10W
		R1434	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R1435	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1436	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R1437	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R1438	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R1439	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1440	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R1441	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R1442	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R1446	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1447	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1448	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1449	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1450	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1452	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1453	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1454	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1455	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1458	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1459	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1460	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1462	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		VR1401	QVZ3521-103Z	V RESISTOR,D/A LEVEL ADJ	
		C1401	QEKJ1CM-336	E CAPACITOR	33µF,16V
		C1402	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1403	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1404	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1405	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1406	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1407	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1408	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1410	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C1411	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1412	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1413	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1415	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1416	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1417	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1421	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1422	NDC21HJ-680X	CAPACITOR	68pF,50V
		C1423	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1424	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1425	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1426	NDC21HJ-390X	CAPACITOR	39pF,50V
		C1428	NDC21HJ-220X	CAPACITOR	22pF,50V
		C1429	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1430	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1432	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1433	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1435	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1436	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1437	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1438	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1439	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1440	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1441	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1442	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1444	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1445	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1446	QEKJ0JM-107	E CAPACITOR	100µF,6.3V
		C1447	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1448	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1449	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1451	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C1452	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1453	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1454	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1455	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1456	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1457	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1458	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1459	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1460	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1461	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1462	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1463	QEKJ0JM-336	E CAPACITOR	33µF,6.3V
		C1465	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1466	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1467	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1468	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1471	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1472	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		C1473	NCF21EZ-104X	CAPACITOR	0.1µF,25V
		L1401	QQL29BJ-100Z	COIL	10µH
		L1402	QQL071J-6R8Y	COIL	6.8µH
		L1403	QQL071J-6R8Y	COIL	6.8µH
		L1404	QQL071J-6R8Y	COIL	6.8µH
		L1405	QQL29BJ-100Z	COIL	10µH
		L1406	QQL071J-330Y	COIL	33µH
		L1407	QQL29BJ-100Z	COIL	10µH
		L1408	QQL29BJ-4R7Z	COIL	4.7µH
		LC1401	QQR0657-013Z	NOISE FILTER	
		LC1402	QQR0657-010Z	NOISE FILTER	
		SD1	LP30706-001B	SHIELD FRAME(S VHS)	
		SD2	LP30684-001A	SHIELD CASE(S VHS)	
		CN1401	QGG2502K1-17	HEADER PIN	

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TERMINAL BOARD ASSEMBLY <06>

	PW1	LPA10101-01B	TERMINAL BOARD ASSY
	IC201	LC74785N-9762	IC (OSD)
	Q203	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q207	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q901	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q903	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q904	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	D201	1SS133	DIODE
	D204	1SS133	DIODE
	D205	1SS133	DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		D206	1SS133	DIODE	
		D207	1SS133	DIODE	
		R201	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R205	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R207	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R208	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R212	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R213	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R214	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R217	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R218	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R219	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R223	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R901	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R904	QRE123J-331X	RESISTOR	330Ω,1/2W
		R905	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R911	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R914	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R915	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R916	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R917	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R919	QRE123J-331X	RESISTOR	330Ω,1/2W
		R920	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R921	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R922	QRE123J-331X	RESISTOR	330Ω,1/2W
		R934	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R935	NRSA02J-100X	MG RESISTOR	10Ω,1/10W
		R941	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R942	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R943	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R947	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R948	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		C201	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C202	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C204	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C206	NDC21HJ-330X	CAPACITOR	33pF,50V
		C207	NDC21HJ-330X	CAPACITOR	33pF,50V
		C214	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C218	NCB21AK-105X	CAPACITOR	1µF,10V
		C220	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C222	NCB21AK-105X	CAPACITOR	1µF,10V
		C223	NDC21HJ-680X	CAPACITOR	68pF,50V
		C902	QETJ0JM-477	E CAPACITOR	470µF,6.3V
		C903	QEKJ1CM-107	E CAPACITOR	100µF,16V
		C904	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C911	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C912	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C914	QETJ0JM-477	E CAPACITOR	470µF,6.3V
		C918	NCB21HK-103X	CAPACITOR	0.01µF,50V
		L201	QQL29BJ-100Z	COIL	10µH
		L203	QQL231J-220Y	COIL	22µH
		L901	QQL29BJ-100Z	COIL	10µH
		SW901	QSW0887-001	SLIDE SWITCH	
	⚠	TB1	LP30716-001A	TERMINAL BOARD ASSY	
		OT1	QYTDSF3008Z	SCREW,X5	
		J901	QND0009-001	S JACK,S1 IN	
		J903	QND0009-001	S JACK,S1 OUT	
		J905	QNN0364-002	PIN JACK,VLR IN	
		J911	QNN0363-002	PIN JACK,VLR OUT	
		J923	PEMC1190	MINI JACK,JLIP	
		J925	PU60659	MINI JACK,SAT.CTL	
		J926	PU60659	MINI JACK,R.PAUSE	
		CN911	QGF1208F1-14	FPC CONNECTOR,(1-14)S_SUB	
		CN912	QGF1208F1-08	FPC CONNECTOR,(1-8)NAVIGATION	
		CN913	QGB2024J1-12S	CONNECTOR,(1-12)MAIN	
		CN914	QGB2024J1-12S	CONNECTOR,(1-12)MAIN	
		CN915	QGB2024J1-05S	CONNECTOR,(1-5)MAIN	
		CN917	QGB2024J1-10S	CONNECTOR,(1-10)MAIN	

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AUDIO CONTROL HEAD BOARD ASSEMBLY <12>

PW1	LPA10010-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

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DEMOD BOARD ASSEMBLY <14>

PW1	PB11076A	DEMOD BOARD ASSY	
IC1501	UPC1852AGT	IC	
	or UPC1854AGT	IC	
R1501	QRE141J-102Y	RESISTOR	1kΩ,1/4W
R1502	QRE141J-334Y	RESISTOR	330kΩ,1/4W
R1503	QRE141J-124Y	RESISTOR	120kΩ,1/4W
R1504	QRE141J-302Y	RESISTOR	3kΩ,1/4W
R1505	QRE141J-512Y	RESISTOR	5.1kΩ,1/4W
R1506	QRE141J-333Y	RESISTOR	33kΩ,1/4W
R1507	QRE141J-333Y	RESISTOR	33kΩ,1/4W
R1508	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
R1509	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R1510	QRE141J-392Y	RESISTOR	3.9kΩ,1/4W
R1511	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R1517	QRE141J-123Y	RESISTOR	12kΩ,1/4W
C1501	QETC1CM-226	E CAPACITOR	22µF,16V
C1502	QETC1HM-104	E CAPACITOR	0.1µF,50V
C1503	QETC1HM-105	E CAPACITOR	1µF,50V
C1504	QETC1HM-475	E CAPACITOR	4.7µF,50V
C1505	QETC1HM-225	E CAPACITOR	2.2µF,50V
C1506	QETC1HM-104	E CAPACITOR	0.1µF,50V
C1507	QFV11HJ-473	F CAPACITOR	0.047µF,50V
C1508	QETC1HM-474	E CAPACITOR	0.47µF,50V
C1509	QETC1HM-104	E CAPACITOR	0.1µF,50V
C1510	QETC1HM-105	E CAPACITOR	1µF,50V
C1511	QETC1HM-105	E CAPACITOR	1µF,50V
C1512	QETC1HM-105	E CAPACITOR	1µF,50V
C1513	QETN1HM-335	T CAPACITOR	3.3µF,50V
C1514	QETN1HM-106	T CAPACITOR	10µF,50V
C1515	QETC1HM-105	E CAPACITOR	1µF,50V
C1516	QETC1HM-106	E CAPACITOR	10µF,50V
C1517	QETC1HM-106	E CAPACITOR	10µF,50V
C1518	QETC1HM-105	E CAPACITOR	1µF,50V
C1521	QETC1HM-106	E CAPACITOR	10µF,50V
BK1	LP40077-001A	BRACKET(BOARD)	
CN1501	QGG2502K1-09	HEADER PIN	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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S-SUB BOARD ASSEMBLY <15>

	PW1	LPA10103-03A	S-SUB BOARD ASSY	
	IC501	JCP8018	IC	
		or JCP8028	IC	
		or JCP8028-01	IC	
		or JCP8038		
	IC502	VC2076DP	IC	
	R503	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
	R504	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
	R505	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
	R506	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
	R507	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
	R508	NRSA02J-151X	MG RESISTOR	150Ω,1/10W
	R509	NRSA02J-162X	MG RESISTOR	1.6kΩ,1/10W
	R510	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
	R511	NRVA02D-471X	CMF RESISTOR	470Ω,1/10W
	R512	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
	R513	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
	R514	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
	R515	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
	R516	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R517	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R525	NRSA02J-125X	MG RESISTOR	1.2MΩ,1/10W
	R527	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
	R531	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R532	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R535	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R536	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	C501	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
	C502	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
	C503	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
	C504	NCB21EK-104X	CAPACITOR	0.1µF,25V
	C505	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
	C506	NCB21EK-104X	CAPACITOR	0.1µF,25V
	C507	QEKJ0JM-227	E CAPACITOR	220µF,6.3V
	C508	QEPF1HM-474	NP E CAPACITOR	0.47µF,50V
	C509	QEKJ1CM-106	E CAPACITOR	10µF,16V
	C510	QEKJ0JM-227	E CAPACITOR	220µF,6.3V
	C511	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C512	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C513	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
	C514	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C515	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C516	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C517	NCF21EZ-104X	CAPACITOR	0.1µF,25V
	C518	NCB21EK-104X	CAPACITOR	0.1µF,25V
	C519	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
	C520	QERF1EM-475	E CAPACITOR	4.7µF,25V
	C521	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
	C522	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
	C523	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
	C524	NDC21HG-301X	CAPACITOR	300pF,50V
	C525	NDC21HG-301X	CAPACITOR	300pF,50V
	C526	NDC21HJ-101X	CAPACITOR	100pF,50V
	C527	NDC21HJ-181X	CAPACITOR	180pF,50V
	C528	NDC21HG-271X	CAPACITOR	270pF,50V
	C529	NDC21HG-820X	CAPACITOR	82pF,50V
	C530	NDC21HG-221X	CAPACITOR	220pF,50V
	C531	NDC21HG-301X	CAPACITOR	300pF,50V
	C532	NDC21HG-301X	CAPACITOR	300pF,50V
	C533	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C534	QETJ0JM-477	E CAPACITOR	470µF,6.3V
	C535	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C551	QEKJ1HM-105	E CAPACITOR	1µF,50V
	C553	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C557	QEKJ1HM-105	E CAPACITOR	1µF,50V
	C559	NCB21HK-103X	CAPACITOR	0.01µF,50V
	C560	QEKJ1HM-105	E CAPACITOR	1µF,50V
	C561	QEKJ1HM-105	E CAPACITOR	1µF,50V
	C563	NCB21HK-103X	CAPACITOR	0.01µF,50V
	L501	QQL29BJ-100Z	COIL	10µH
	L503	QQL29BJ-100Z	COIL	10µH
	L504	QQL29BJ-100Z	COIL	10µH
	BK1	LP40077-001A	BRACKET(BOARD)	
	CN511	QGG2503K2-30	HEADER PIN,(1-30)MAIN	
	CN512	QGF1209F2-14	FFC/FPC CONNECTOR,(1-14)TERMINAL	

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NAVIGATION BOARD ASSEMBLY <19>

	PW1	LPA10108-02C	NAVIGATION BOARD ASSY	
	IC3301	MN101C12GCC	IC(MCU)	
		or MN101CP12GAFCC	IC(MCU)	
	IC3401	74HC4053D	IC	
	IC3402	74HC4053D	IC	
	IC3403	AT45D011-SC-X	IC	
	D3401	RB751V-40-X	SB DIODE	
	D3407	1SS355	DIODE	
	R3302	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3313	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
	R3321	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3322	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3323	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3326	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R3328	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3329	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3330	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3331	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
	R3332	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
	R3333	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R3339	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R3340	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
	R3342	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3343	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3345	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3346	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3347	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3348	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3349	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3350	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3351	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3352	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3371	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3372	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3373	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
	R3386	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R3401	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3402	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3403	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3404	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3412	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3414	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3415	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3422	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3432	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3452	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R3462	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3463	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R3464	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R3465	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3466	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3468	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		C3312	NDC21HJ-200X	CAPACITOR	20pF,50V
		C3313	NDC21HJ-200X	CAPACITOR	20pF,50V
		C3314	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3321	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3322	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3323	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3333	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3345	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3346	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3347	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3401	QEKJ0JM-226	E CAPACITOR	22μF,6.3V
		C3402	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3403	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3404	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3405	NCB21EK-104X	CAPACITOR	0.1μF,25V
		X3301	QAX0584-001	CRYSTAL RESONATOR	
		BK1	LP40425-001A	BRACKET(BOARD)	
		CN3401	QGG2502K1-13	HEADER PIN	
		CN3402	QGF1207F1-08	FPC CONNECTOR,(1-8)TERMINAL	

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DISPLAY BOARD ASSEMBLY <28>

	PW1	LPA10056-08A1	DISPLAY BOARD ASSY
	IC7001	M35500BGP	IC
		or M35500BFP	IC
		or M35500AGP	IC
	IC7002	PNA4652M00XB	IR DETECT UNIT
		or GP1U281X	IR DETECT UNIT
	D7002	RD9.1ES/B2/-T2	ZENER DIODE
		or UZ9.1BSB	ZENER DIODE
		or MTZJ9.1B	ZENER DIODE
	D7004	1SS133	DIODE
	D7005	1SS133	DIODE
	D7006	1SS133	DIODE
	D7009	SLR-342MC3F	LE DIODE
	D7010	SLR-342VC3F	LE DIODE
	D7011	SLR-342MC3F	LE DIODE
	R7001	QRE141J-471Y	RESISTOR 470Ω,1/4W
	R7002	QRE141J-471Y	RESISTOR 470Ω,1/4W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R7003	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7006	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7007	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7008	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7013	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7020	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7021	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
		R7022	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
		R7023	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R7024	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
		R7025	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R7026	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
		R7027	QRE141J-153Y	RESISTOR	15kΩ,1/4W
		R7028	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R7030	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7031	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
		R7032	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
		R7033	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R7034	QRE141J-153Y	RESISTOR	15kΩ,1/4W
		R7037	QRE141J-153Y	RESISTOR	15kΩ,1/4W
		R7038	QRE141J-393Y	RESISTOR	39kΩ,1/4W
		R7040	QRE141J-331Y	RESISTOR	330Ω,1/4W
		R7041	QRE141J-331Y	RESISTOR	330Ω,1/4W
		R7042	QRE141J-331Y	RESISTOR	330Ω,1/4W
		C7001	QCFB1HZ-104	CAPACITOR	0.1μF,50V
		C7002	QETN1HM-106	E CAPACITOR	10μF,50V
		C7007	QETN1HM-476	E CAPACITOR	47μF,50V
		C7009	QCSB1HJ-150	CAPACITOR	15pF,50V
		C7010	QCFB1HZ-104	CAPACITOR	0.1μF,50V
		C7011	QETN1AM-227	E CAPACITOR	220μF,10V
		C7019	QDVB1EZ-223Y	CAPACITOR	0.022μF,25V
		S7001	QSW0456-002Z	TACT SWITCH,POWER	
		S7002	QSW0456-002Z	TACT SWITCH,CH+	
		S7003	QSW0456-002Z	TACT SWITCH,CH-	
		S7004	QSW0456-002Z	TACT SWITCH,REC	
		S7005	QSW0456-002Z	TACT SWITCH,PAUSE	
		S7006	QSW0456-002Z	TACT SWITCH,PLAY	
		S7007	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
		S7010	QSW0456-002Z	TACT SWITCH,D.TBC/NR	
		S7011	QSW0456-002Z	TACT SWITCH,V.NAVI	
		S7012	QSW0456-002Z	TACT SWITCH,SVHS ET	
		S7013	QSW0456-002Z	TACT SWITCH,REC LINK	
		S7014	QSW0456-002Z	TACT SWITCH,OK	
		S7015	QSW0456-002Z	TACT SWITCH,MENU	
		S7016	QSW0456-002Z	TACT SWITCH,INSERT	
		S7017	QSW0456-002Z	TACT SWITCH,A.DUB	
		DI7001	QLF0032-002	FL TUBE	
		HD1	LP30428-001A	FDP HOLDER(L),DI7001	
		HD2	LP30429-001A	FDP HOLDER(R),DI7001	
		HD3	PQM30038-2-2	LED HOLDER,D7009	
		HD4	PQM30038-1-2	LED HOLDER,D7010	
		HD5	PQM30038-2-2	LED HOLDER,D7011	
		CN7001	QGF1207C1-14	FPC CONNECTOR,(1-14)MAIN	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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REC SAFETY BOARD ASSEMBLY <32>

		PW2	LPA10056-01A2	REC SAFETY BOARD ASSY	
		S7041	QSW0602-004	PUSH SWITCH	
		FW7001	QUM032-07A4A4	PARA RIBON WIRE	

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S JACK BOARD ASSEMBLY <36>

		PW4	LPA10056-08A4	JACK BOARD ASSY	
		D7199	MTZJ6.2A	ZENER DIODE	
			or RD6.2ES/B1/-T2	ZENER DIODE	
		R7191	QRE141J-750Y	RESISTOR	75Ω,1/4W
		R7193	QRE141J-750Y	RESISTOR	75Ω,1/4W
		R7194	QRE141J-750Y	RESISTOR	75Ω,1/4W
		J7191	PEMC1126	PIN JACK,VIDEO IN	
		J7192	PEMC0922	PIN JACK(SW),A(L)IN	
		J7193	PEMC0922	PIN JACK(SW),A(R)IN	
		J7194	QND0085-001	S JACK,S VIDEO	
		CN7191	QGF1207F1-05	FPC CONNECTOR,(3-7)	
		CN7192	QGF1207F1-04	FPC CONNECTOR,(1-4)MAIN	

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JOG BOARD ASSEMBLY <37>

		PW3	LPA10056-01A3	JOG BOARD ASSY	
		UN7091	PEME0976	JOG ASSY	
		CN7005	QGF1207F1-06	FPC CONNECTOR,(1-6)MAIN	

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AUDIO ERASE BOARD ASSEMBLY <46>

		PW2	LPA10106-51A2	AUDIO ERASE BOARD ASSY	
		Q2051	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
		R2054	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		C2052	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
		C2053	NCB21HK-332X	CAPACITOR	0.0033μF,50V
		C2054	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2055	QEKJ1CM-106	E CAPACITOR	10μF,16V
		T2051	PELN0860	OSC TRANSFORMER	
		CN2052	QGB2024J1-04S	CONNECTOR,(1-4)MAIN	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

LOADING MOTOR BOARD ASSEMBLY <55>

	PW2	LPA10010-01A2	LOADING MOTOR BOARD ASSY
	CN1	QGB2533K1-02	CONNECTOR

****

GR BOARD ASSEMBLY <96>

	PW1	LPA10041-02A	GR BOARD ASSY
	IC1901	M52661FP	IC
	IC1902	MB40C568	SOP IC
	IC1903	OR43101MQC	IC
	IC1904	S-80728AN-DR-X	IC
		or S-80828ANUP-W	IC
	IC1905	S-80742AN-D6-X	IC
		or S-80842ANUP-W	IC
	IC1906	L5431	IC
	IC1907	MM1115XF	SOP IC
	Q1901	2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q1922	2SD2528/P/	TRANSISTOR
	Q1941	2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q1942	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q1943	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q1944	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q1945	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q1946	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q1947	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q1948	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q1949	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q1950	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
	Q1951	2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		Q1952	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
		Q1953	2SC4081/QRS/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q1954	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
			or 2SD1819A/QRS/-X	TRANSISTOR	
		Q1955	2SA1576A/QR/-X	TRANSISTOR	
			or 2SB1218A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		D1901	DA204U	DIODE	
		D1923	11ES2	DIODE	
			or 1A3G	DIODE	
		D1924	11ES2	DIODE	
			or 1A3G	DIODE	
		D1941	DAP202U	DIODE	
		D1943	DA204U	DIODE	
		D1944	DAP202U	DIODE	
		R1901	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
		R1902	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1905	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1906	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1907	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1908	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1909	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1910	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1911	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1912	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1931	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1932	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1934	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1937	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1938	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1939	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1940	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1941	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1942	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1943	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1944	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1945	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1946	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1947	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1948	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R1949	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1950	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1951	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1952	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1953	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1954	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R1955	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1956	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1957	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1958	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R1959	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R1960	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1961	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1962	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R1963	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R1965	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R1966	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R1967	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1968	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1969	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1970	NRSA02J-333X	MG RESISTOR	33kΩ,1/10W
		R1971	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1972	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1973	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R1974	NRSA02F-4121X	MG RESISTOR	4.12kΩ,1/10W
		R1975	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R1976	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1977	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1978	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1979	NRSA02J-560X	MG RESISTOR	56Ω,1/10W
		R1980	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1981	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R1982	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R1986	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1987	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1988	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1989	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R1990	NRVA02D-683X	CMF RESISTOR	68kΩ,1/10W
		R1991	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1992	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R1993	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R1994	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1995	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R1996	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
		R1997	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R1998	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		RA1901	NRZ0040-101X	NET RESISTOR	100Ω
		RA1902	NRZ0040-101X	NET RESISTOR	100Ω
		RA1931	NRZ0040-101X	NET RESISTOR	100Ω
		RA1932	NRZ0040-101X	NET RESISTOR	100Ω
		C1901	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1902	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1906	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1907	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1913	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C1919	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1920	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1921	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1922	NCF21CZ-105X	CAPACITOR	1µF,16V
		C1923	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C1926	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1927	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1928	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C1930	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1932	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1933	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1934	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1935	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1938	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1941	QEKJ1AM-107	E CAPACITOR	100µF,10V
		C1942	NDC21HJ-220X	CAPACITOR	22pF,50V
		C1943	NDC21HJ-5R0X	CAPACITOR	5pF,50V
		C1944	NDC21HJ-390X	CAPACITOR	39pF,50V
		C1945	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1946	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1947	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1948	NDC21HJ-680X	CAPACITOR	68pF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C1949	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1950	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1951	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1952	NCB21HK-681X	CAPACITOR	680pF,50V
		C1953	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C1954	NDC21HJ-220X	CAPACITOR	22pF,50V
		C1955	NDC21HJ-5R0X	CAPACITOR	5pF,50V
		C1956	NDC21HJ-390X	CAPACITOR	39pF,50V
		C1957	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C1958	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C1959	NCB21CK-474X	CAPACITOR	0.47µF,16V
		C1961	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1962	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C1963	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1964	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C1965	NDC21HJ-220X	CAPACITOR	22pF,50V
		C1966	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1967	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C1968	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C1969	NCB21HK-152X	CAPACITOR	0.0015µF,50V
		C1970	QEKJ1HM-225	E CAPACITOR	2.2µF,50V
		C1971	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1972	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C1973	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1974	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1975	NDC21HJ-150X	CAPACITOR	15pF,50V
		C1977	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1978	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1979	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1980	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1981	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1982	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1983	QEKJ1AM-107	E CAPACITOR	100µF,10V
		C1984	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1985	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1986	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C1987	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1992	NCB21CK-474X	CAPACITOR	0.47µF,16V
		C1993	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C1994	QEKJ0JM-337	E CAPACITOR	330µF,6.3V
		C1995	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1996	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C1997	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1998	NDC21HJ-470X	CAPACITOR	47pF,50V
		C1999	NDC21HJ-470X	CAPACITOR	47pF,50V
		L1941	QQL29BJ-220Z	COIL	22µH
		L1942	QQL29BJ-150Z	COIL	15µH
		L1943	QQL29BJ-330Z	COIL	33µH
		L1944	QQL29BJ-100Z	COIL	10µH
		L1945	QQL29BJ-100Z	COIL	10µH
		CF1941	QAX0492-001	RESONATOR	
		LC1901	QQR0657-013Z	NOISE FILTER	
		X1941	QAX0012-001	CRYSTAL RESONATOR	
		K1901	QQR0678-001Z	FERRITE BEAD	
		K1931	QQR0678-001Z	FERRITE BEAD	
		K1932	QQR0678-001Z	FERRITE BEAD	
		SD1	LP30489-001A	SHIELD CASE(GR)	
		SD2	LP30490-001A	SHIELD PLATE(GR)	
		CN1902	QGF1207C1-11	FPC CONNECTOR,(1-11)MAIN	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

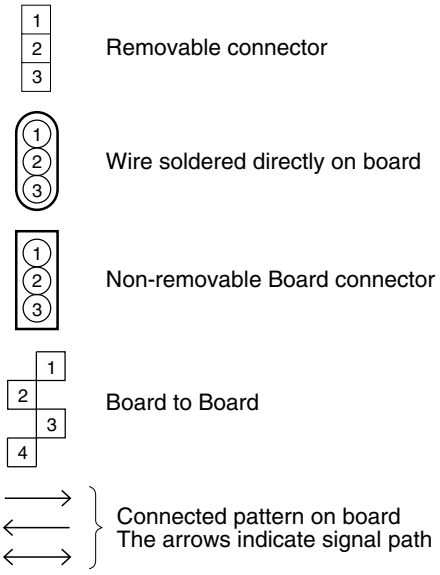
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

AUX : Active at high

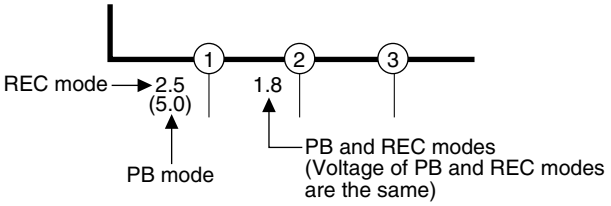
$\overline{\text{AUX}}$ or AUX(L) : Active at low

3. Interpreting Connector indications



4. Voltage measurement

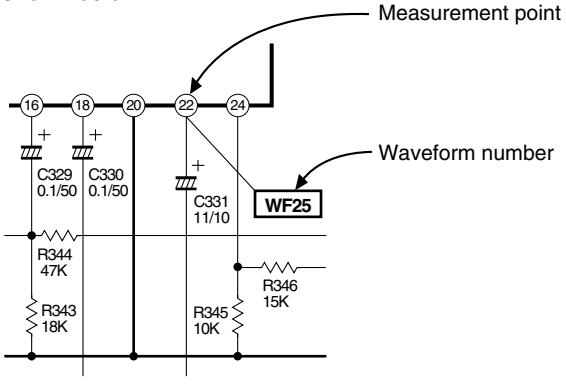
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



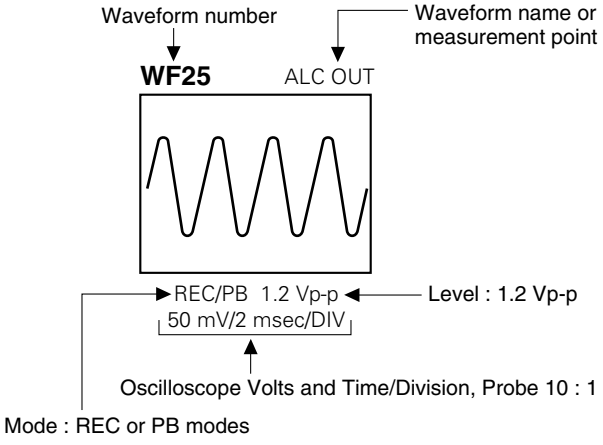
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.

Playback signal path

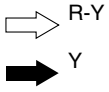
Playback and recording signal path

Recording signal path
(including E-E signal path)

Capstan servo path

Drum servo path

(Example)

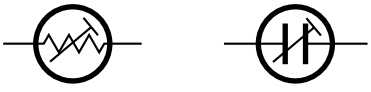


Playback R-Y signal path

Recording Y signal path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

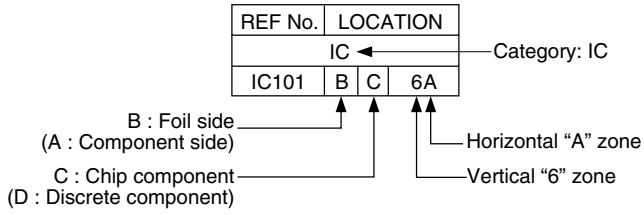
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

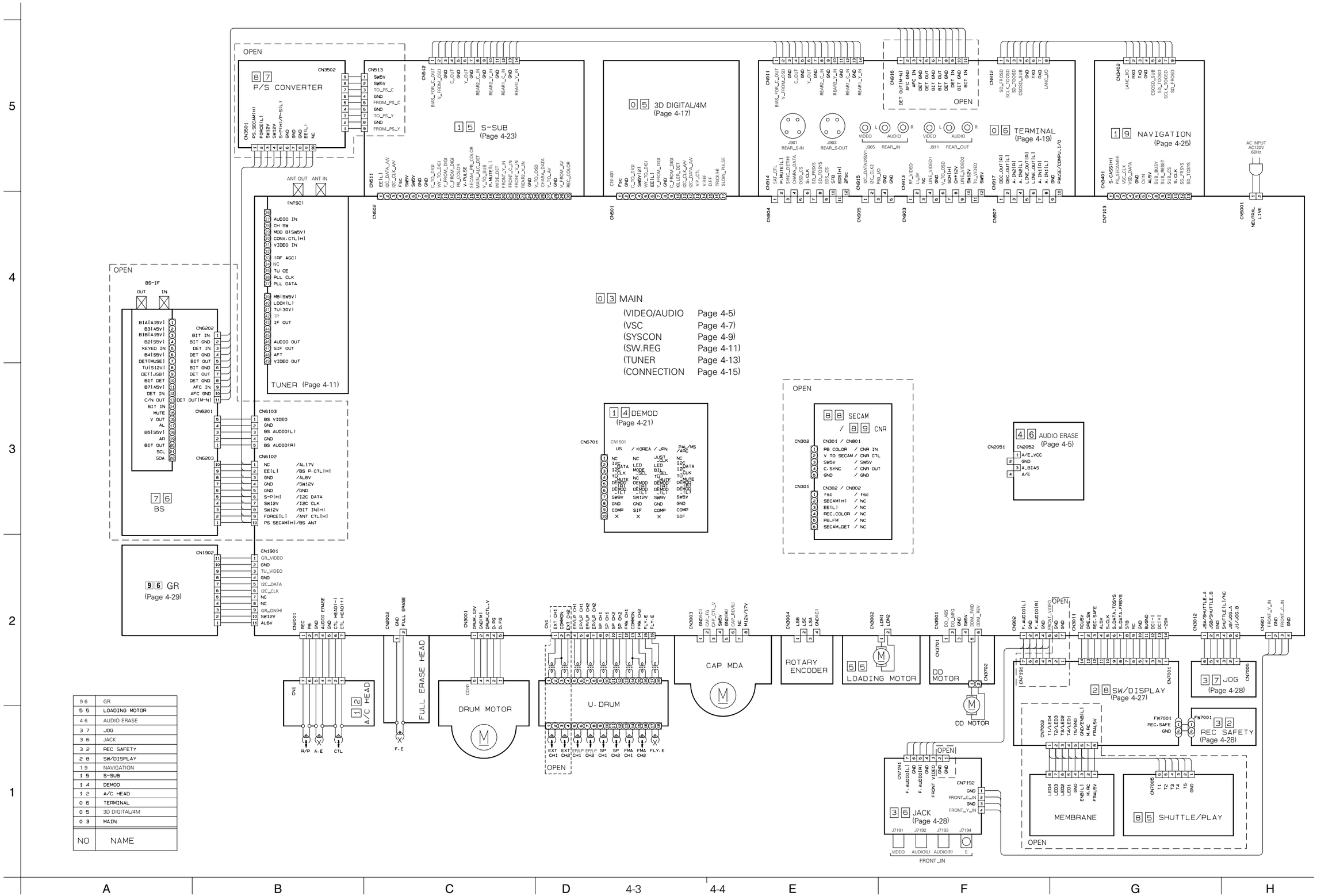
Parts location are indicated by guide scale on the circuit board.



Note:

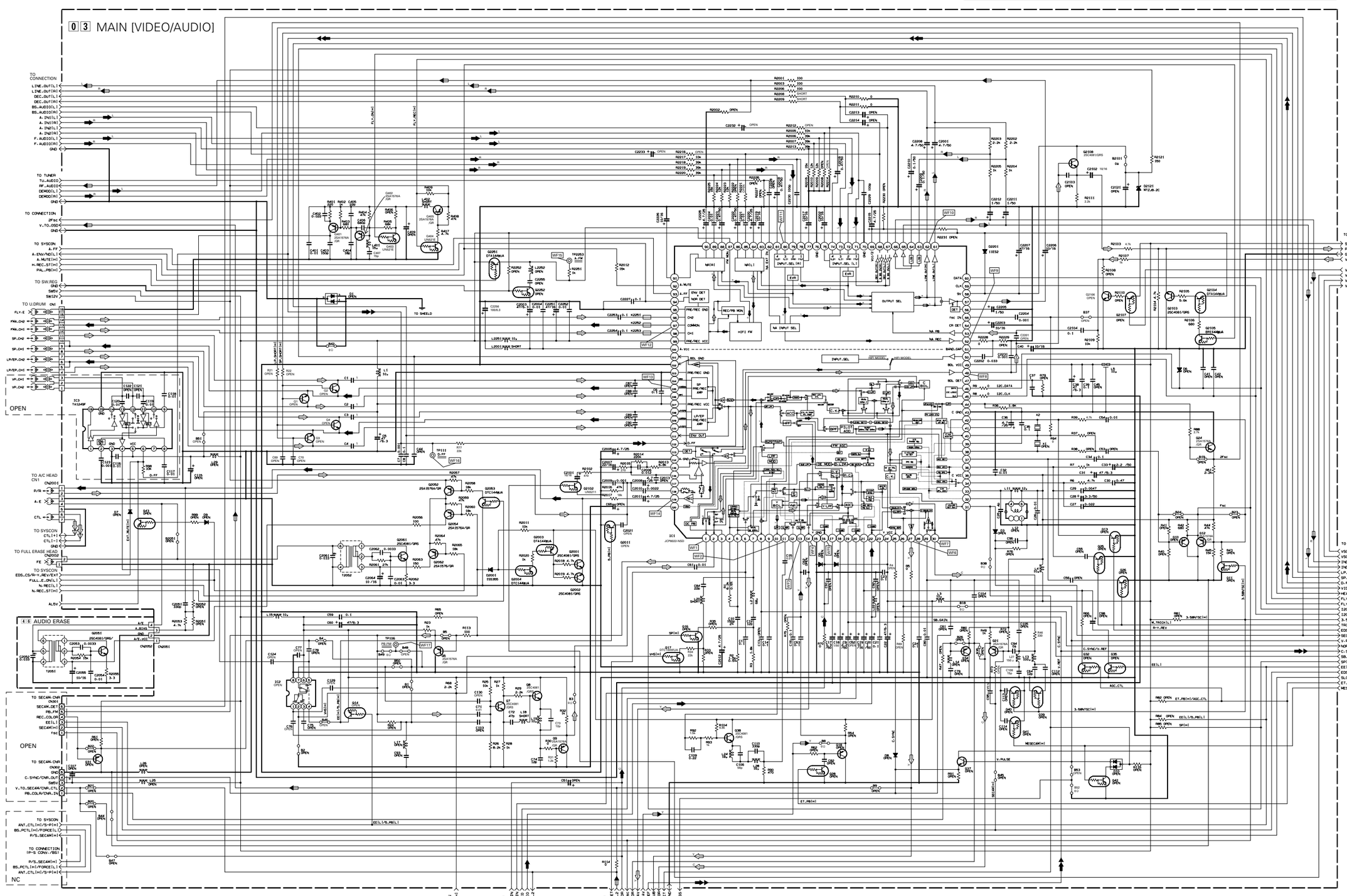
For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

4.1 BOARD INTERCONNECTIONS



4.2 VIDEO/AUDIO AND AUDIO ERASE SCHEMATIC DIAGRAMS

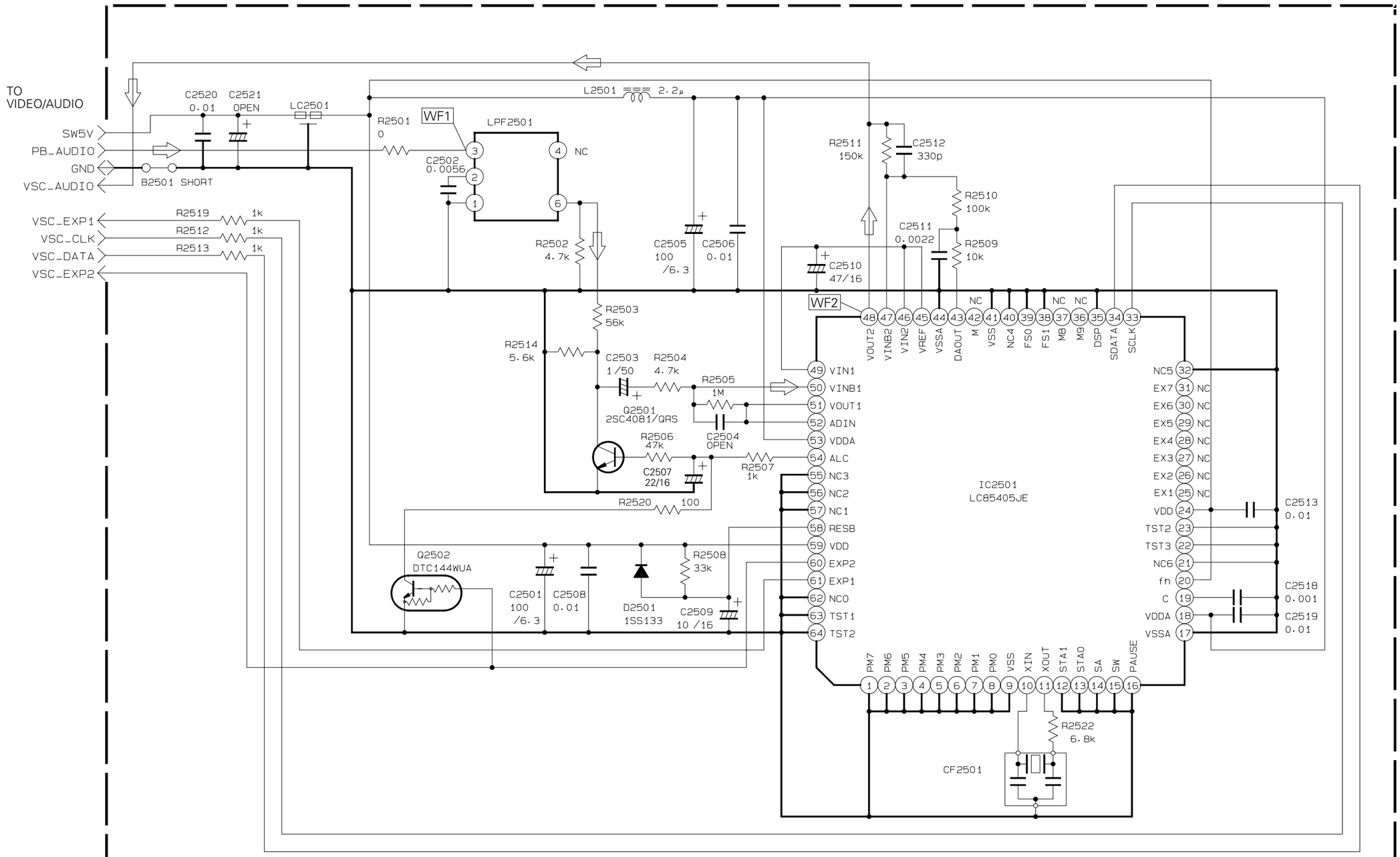
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : For VIDEO/AUDIO waveforms, please refer to page 4-31.

4.3 VSC SCHEMATIC DIAGRAM

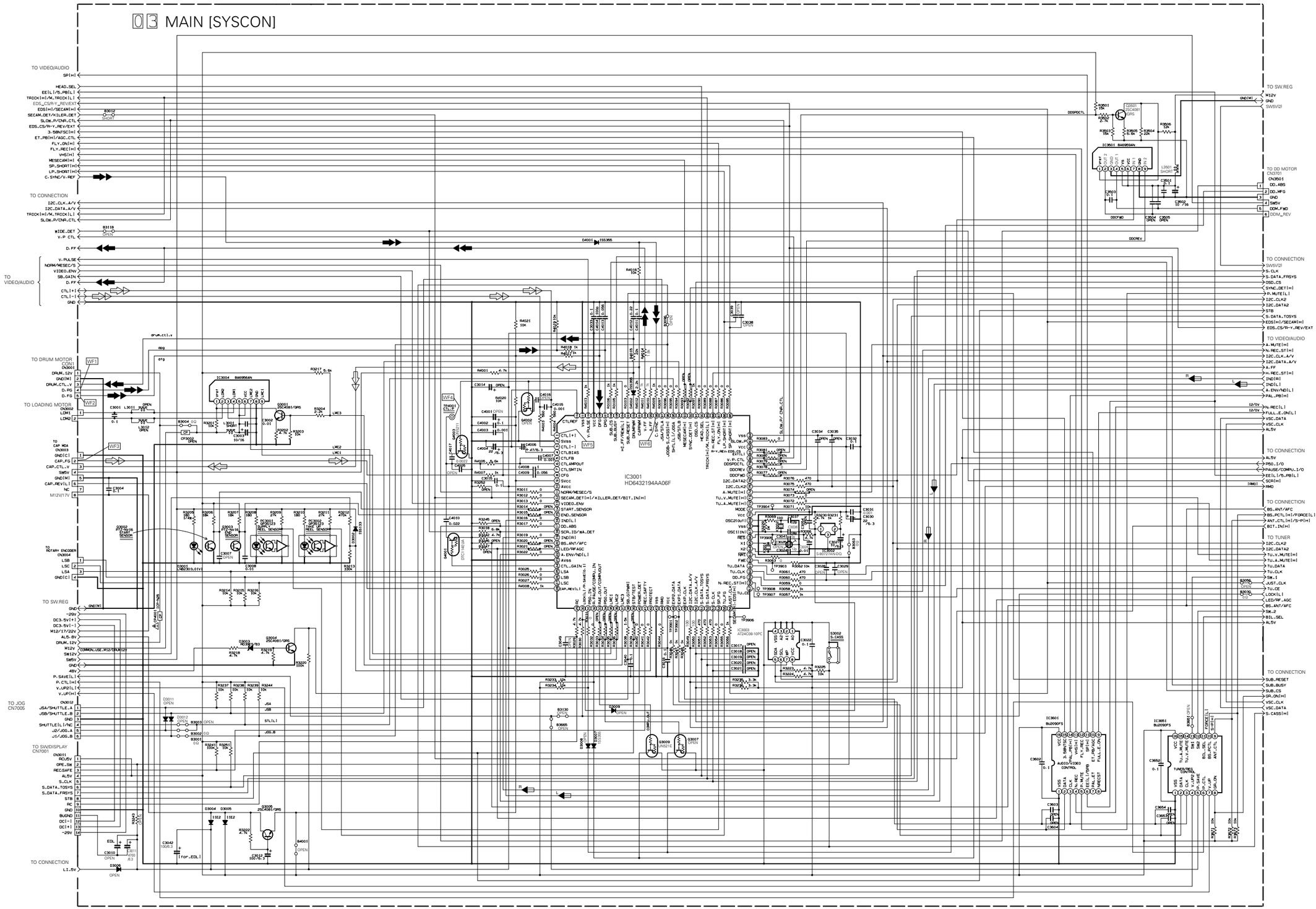
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : For VSC waveforms, please refer to page 4-31.

4.4 SYSTEM CONTROL SCHEMATIC DIAGRAM

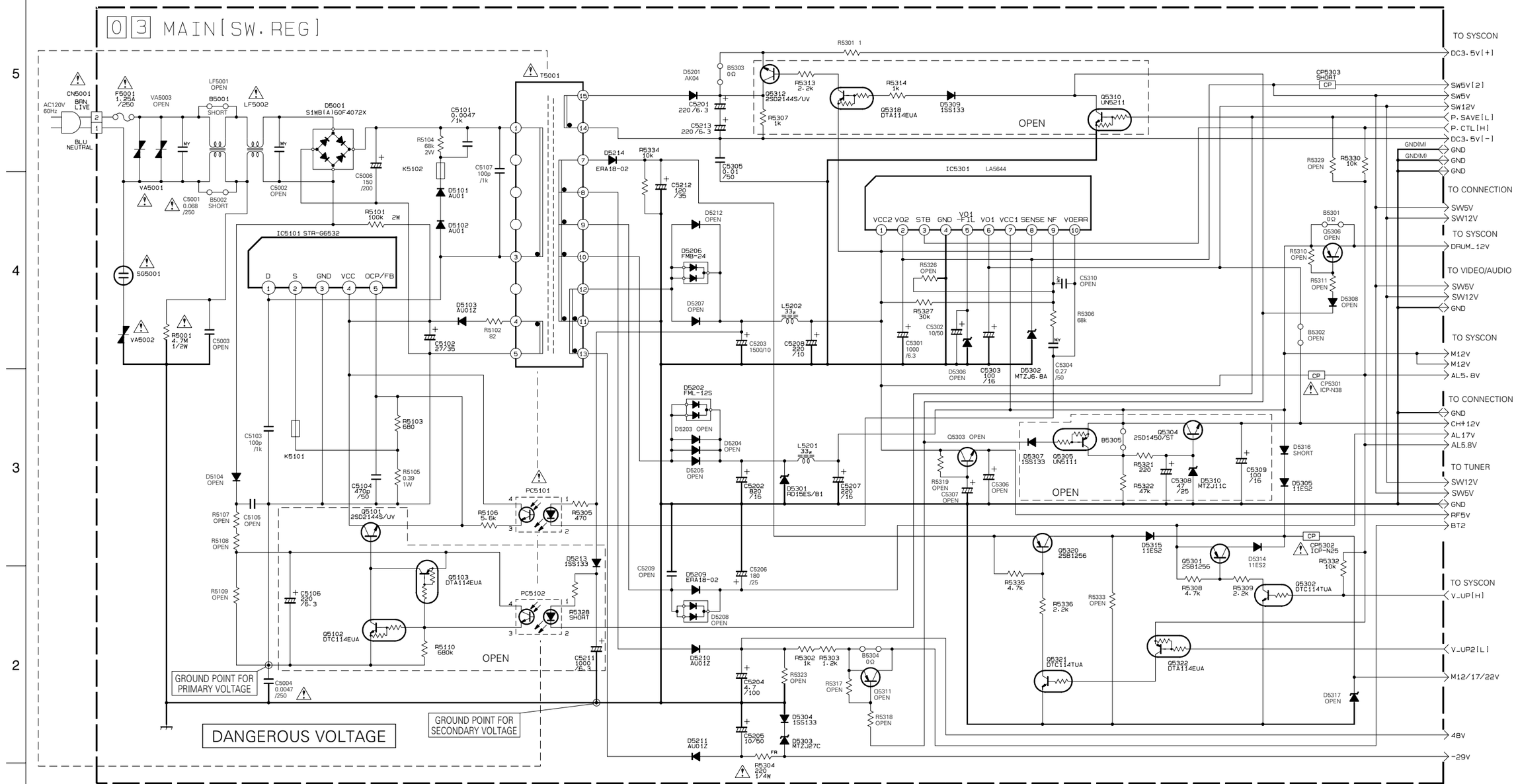
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : For SYSCON waveforms, please refer to page 4-31.

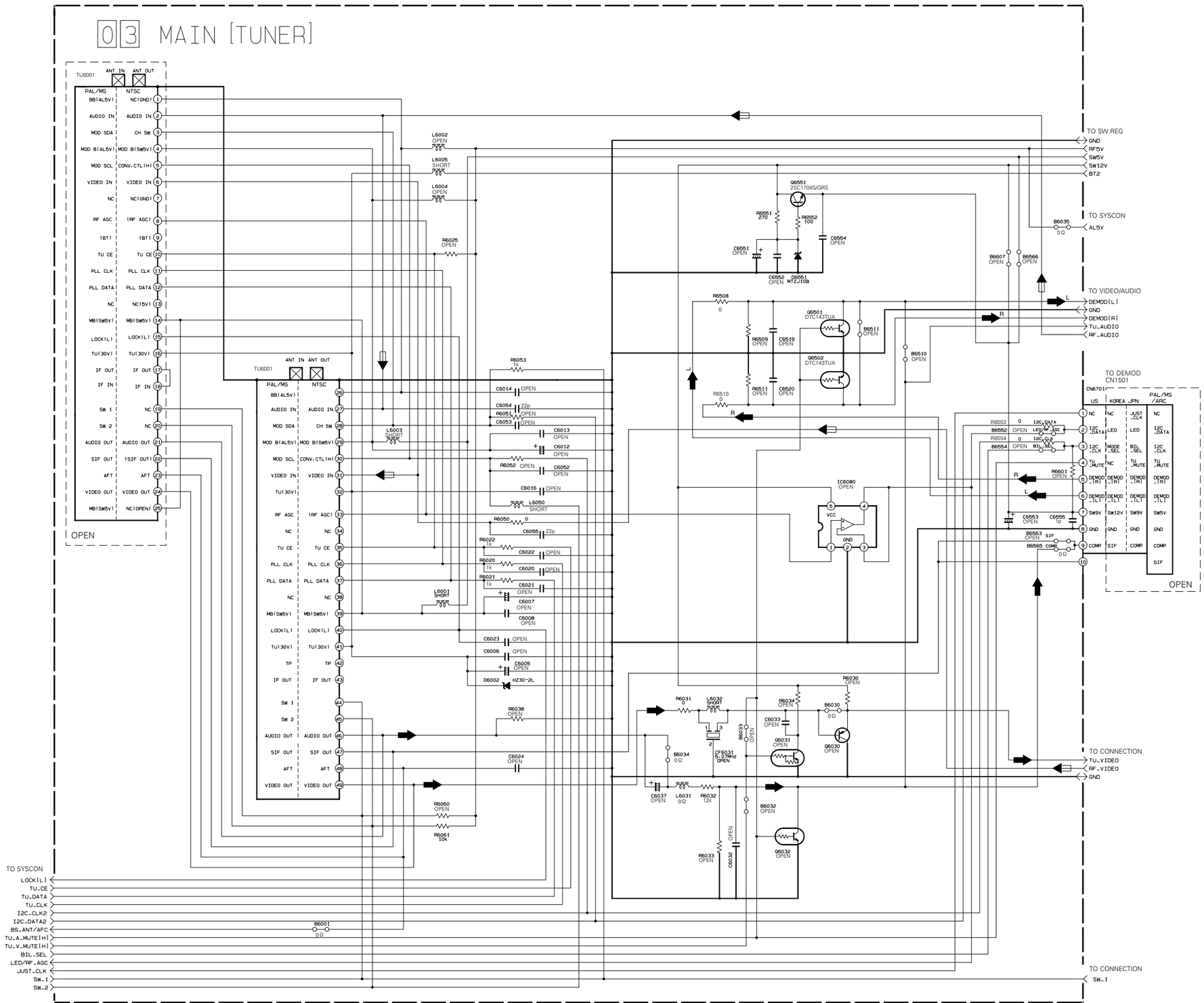
4.5 SWITCHING REGULATOR SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



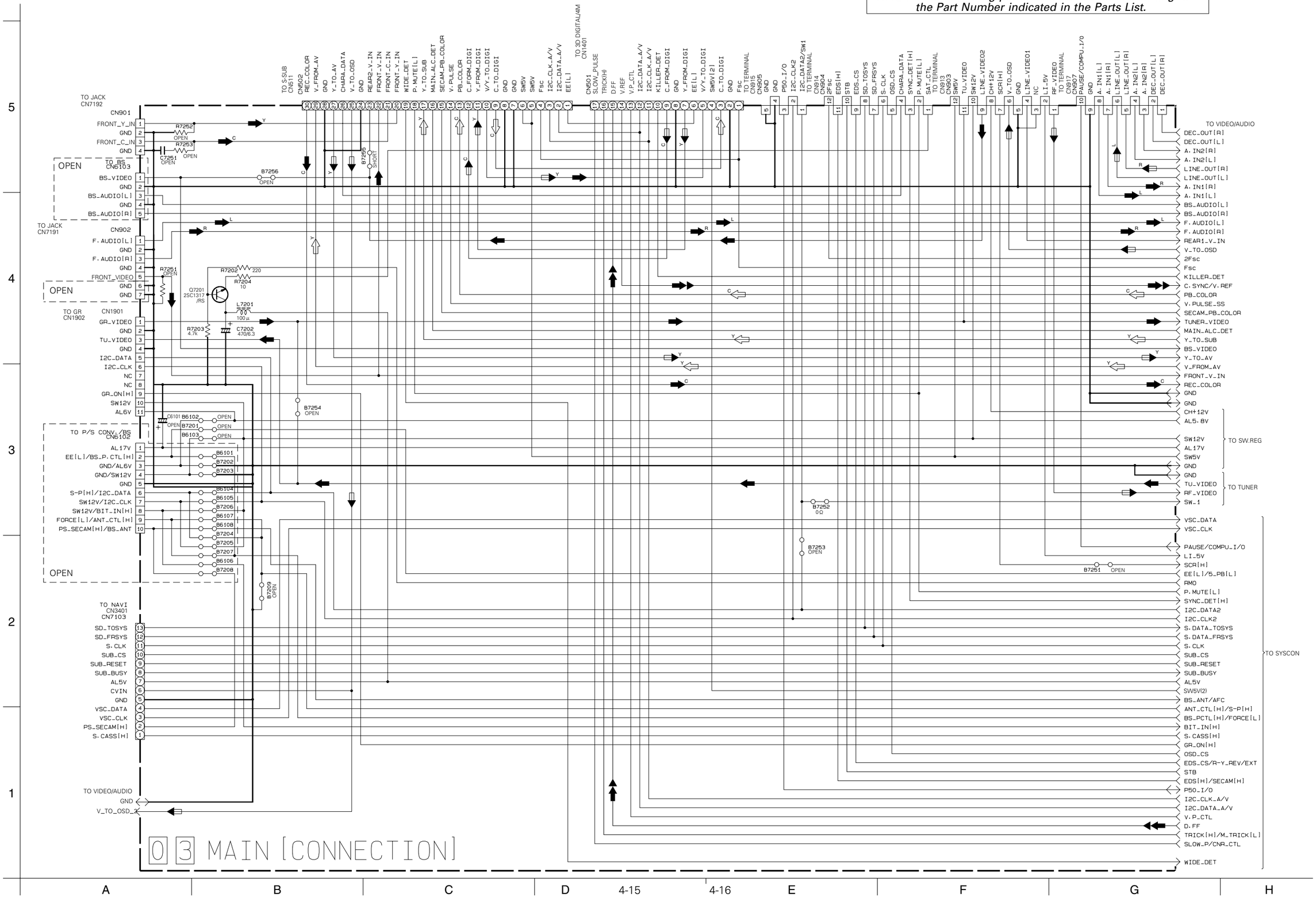
4.6 TUNER SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



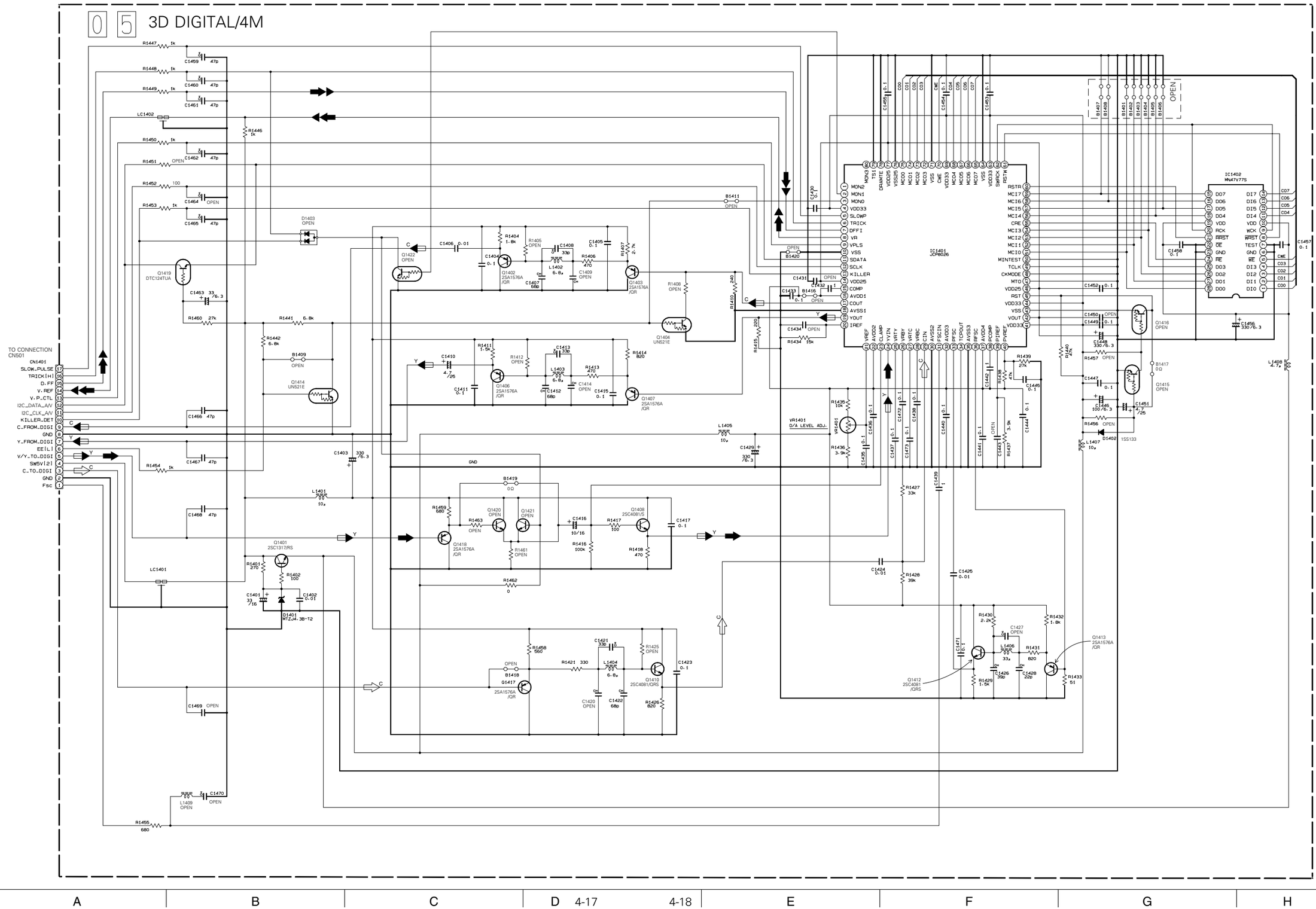
4.7 CONNECTION SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



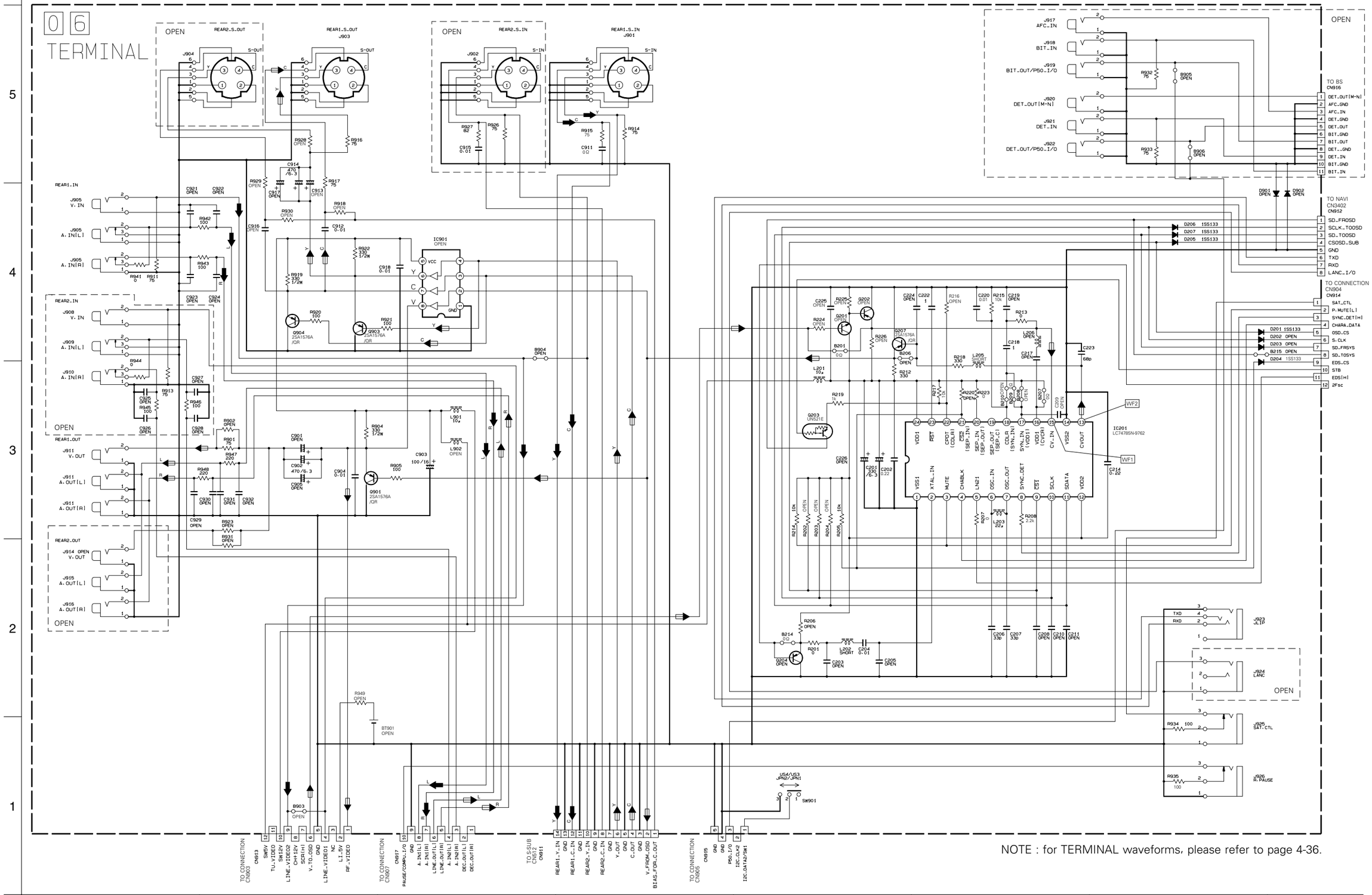
4.8 3D DIGITAL/4M SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.9 TERMINAL SCHEMATIC DIAGRAM

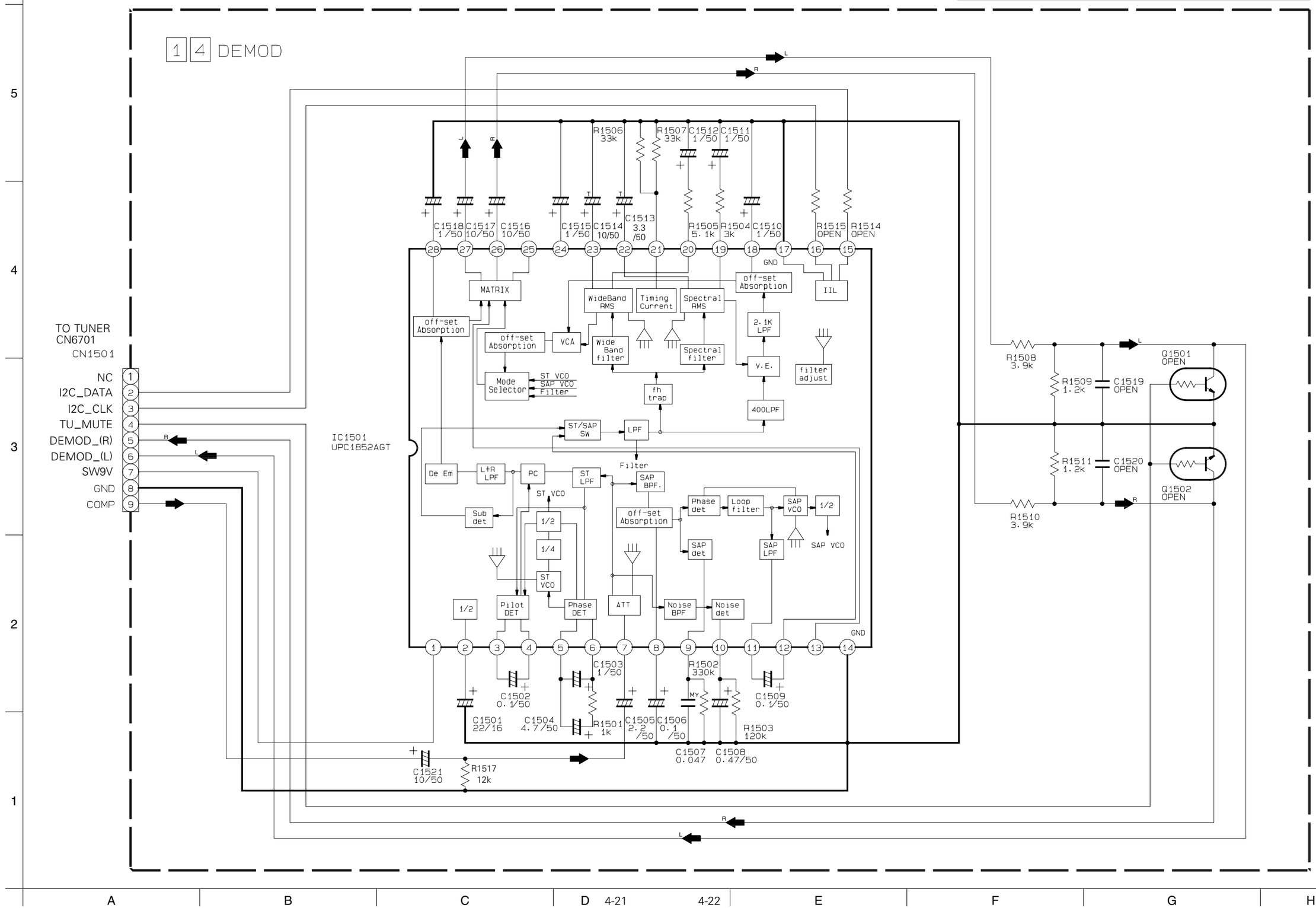
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : for TERMINAL waveforms, please refer to page 4-36.

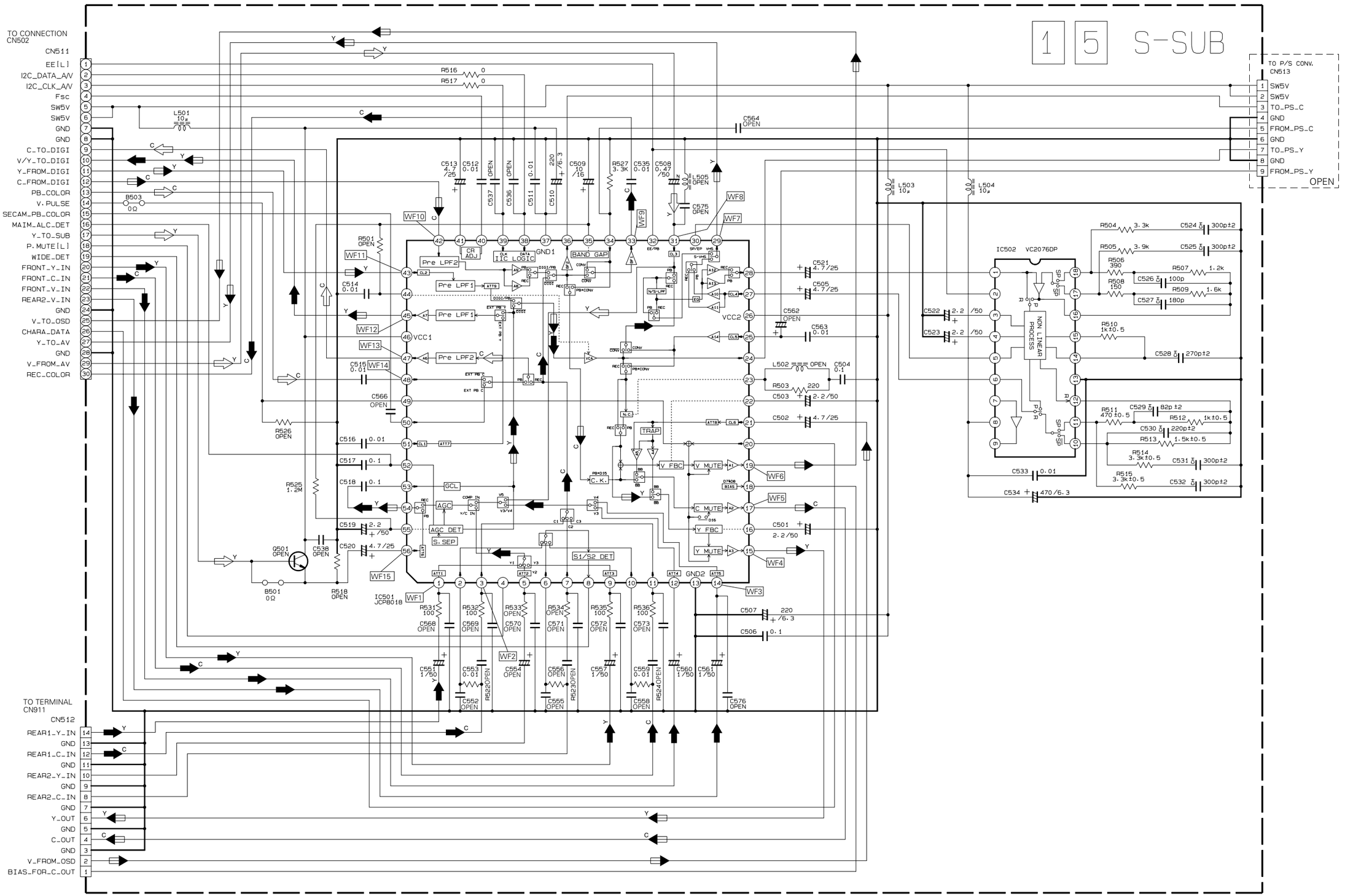
4.10 DEMODULATOR SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.11 S-SUB SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

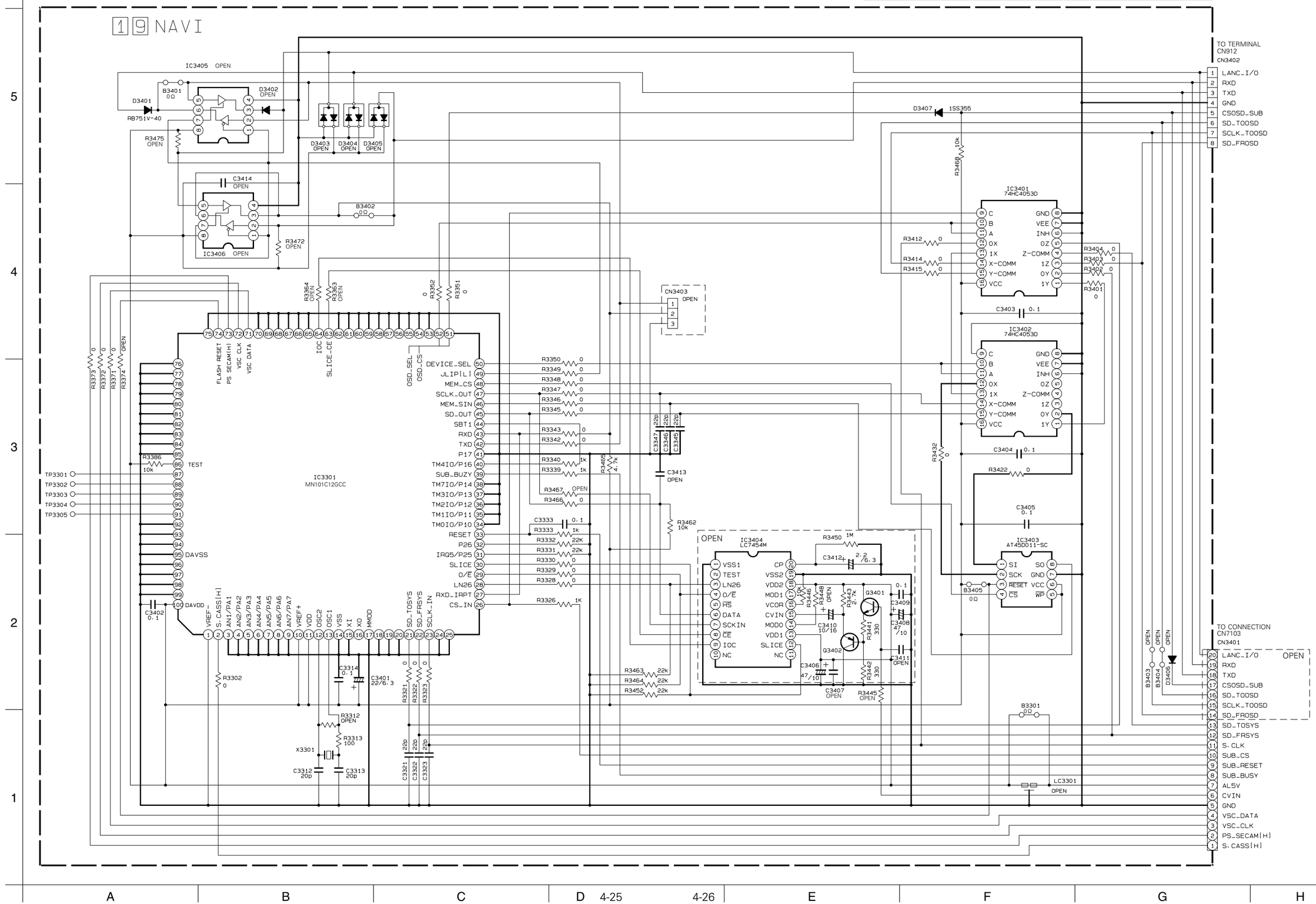


NOTE : For S-SUB waveforms, please refer to page 4-38.

4.12 NAVIGATION SCHEMATIC DIAGRAM

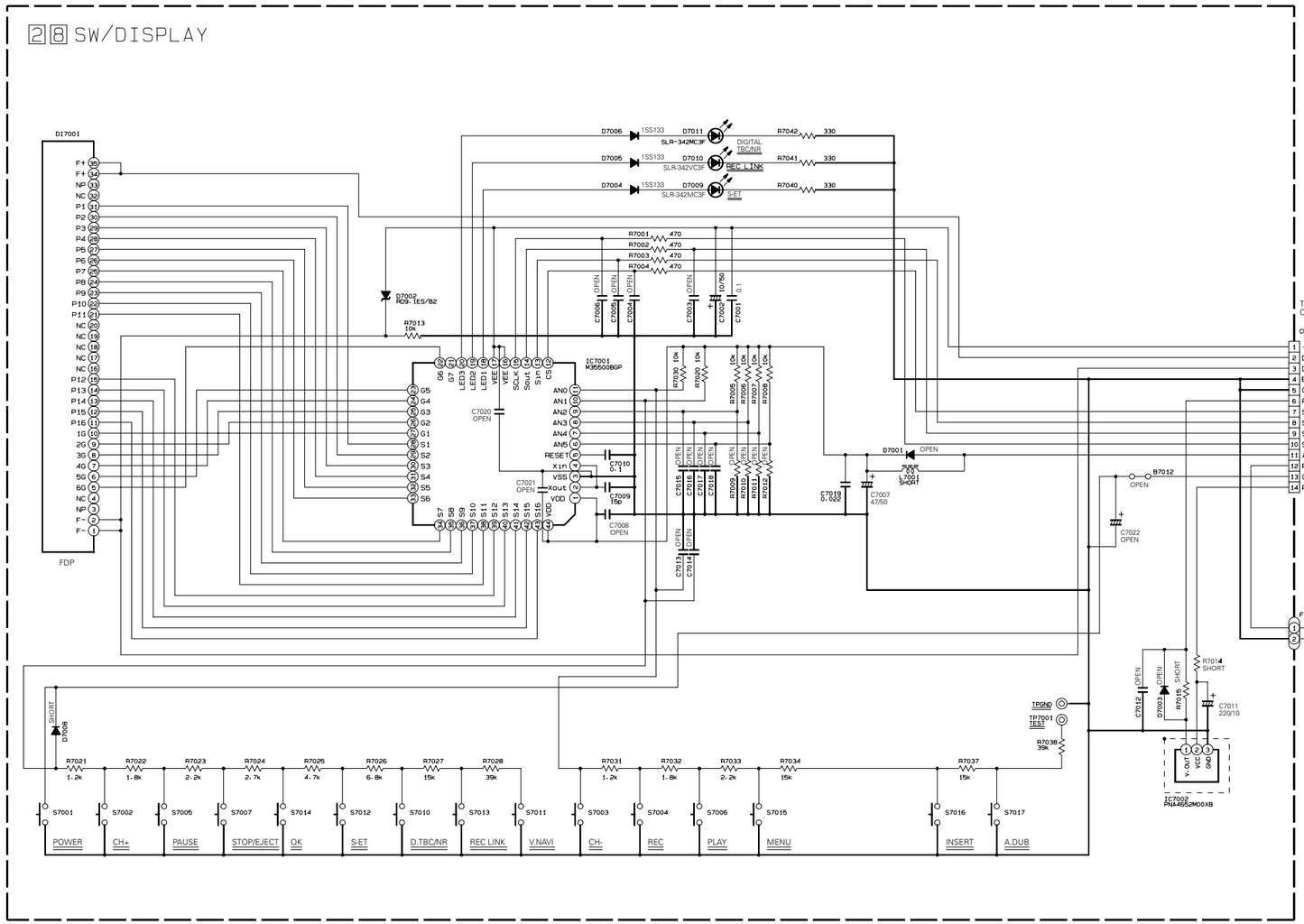
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

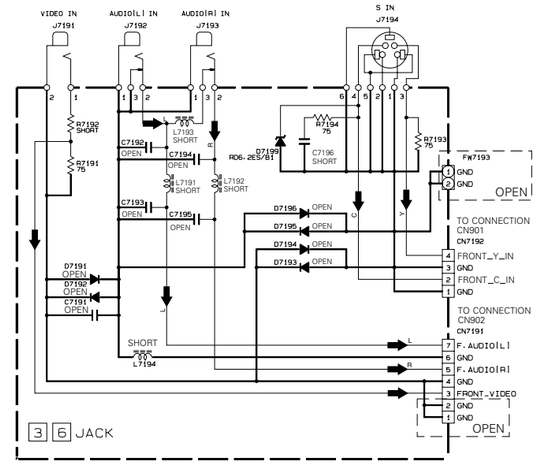
19 NAVI

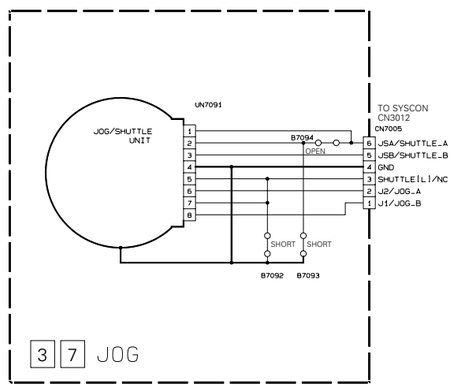


4.13 SW/DISPLAY, REC SAFETY, JACK AND JOG SCHEMATIC DIAGRAMS

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

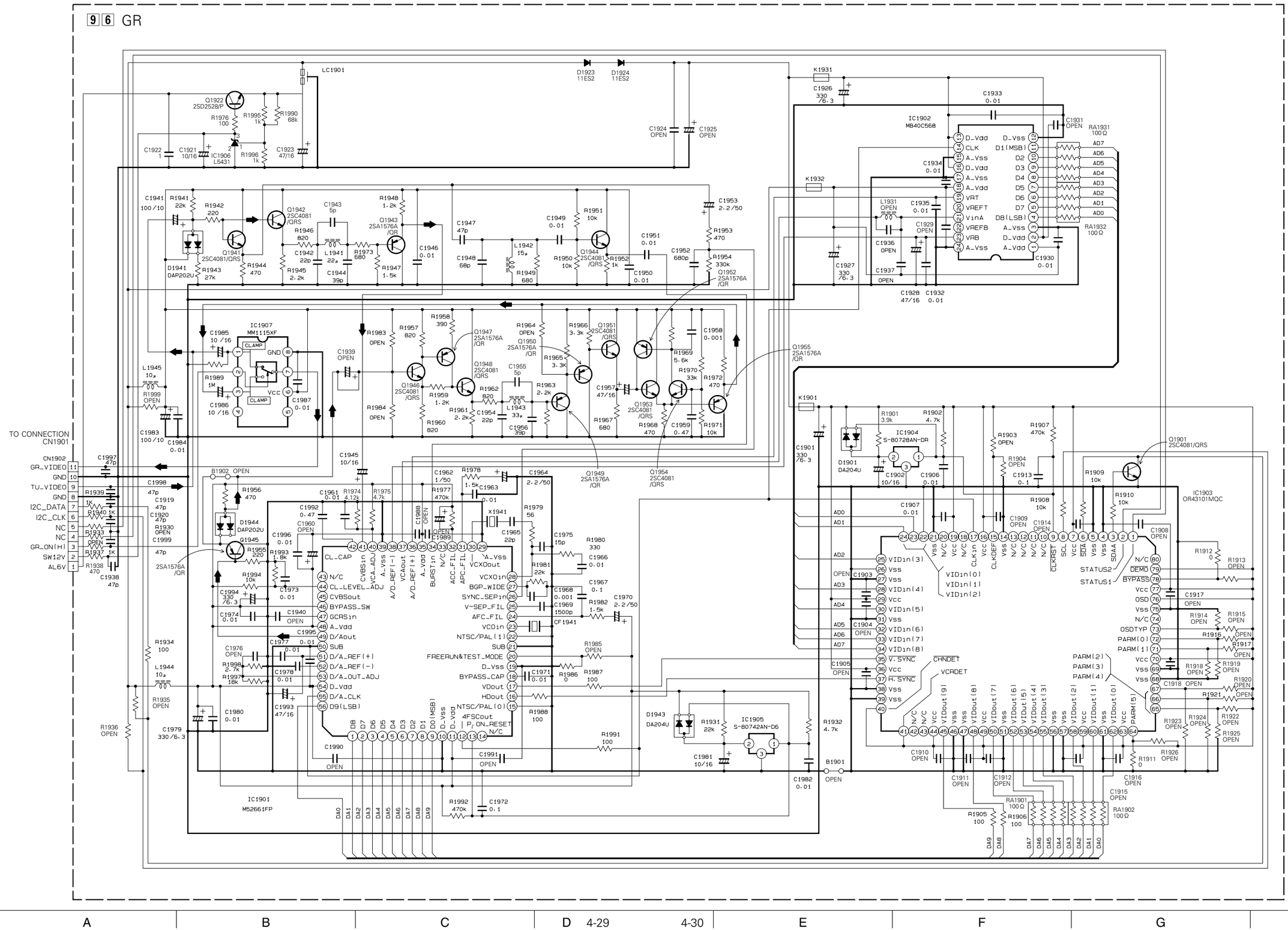






4.14 GR SCHEMATIC DIAGRAM

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

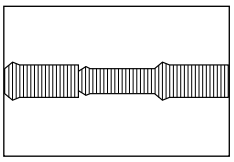


A | B | C | D 4-29 | 4-30 | E | F | G | H

WAVEFORMS

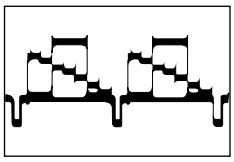
— VIDEO/AUDIO —

WF1 IC1-1



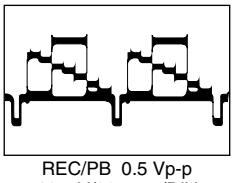
PB 0.28 Vp-p
20 mV/5 msec/DIV

WF2 IC1-11



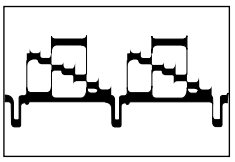
REC/PB 0.5 Vp-p
10 mV/20 µsec/DIV

WF3 IC1-13



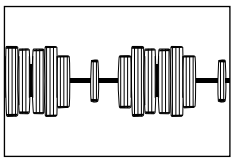
REC/PB 0.5 Vp-p
10 mV/20 µsec/DIV

WF4 IC1-14



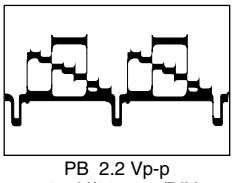
PB 0.6 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-16



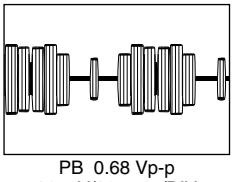
REC 0.7 Vp-p
20 mV/20 µsec/DIV

WF6 IC1-27



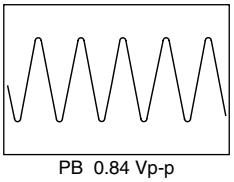
PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF7 IC1-30



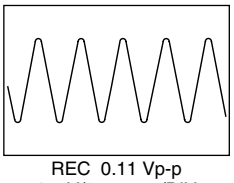
PB 0.68 Vp-p
20 mV/20 µsec/DIV

WF8 IC1-48



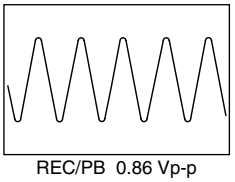
PB 0.84 Vp-p
20 mV/0.5 msec/DIV

WF9 IC1-52



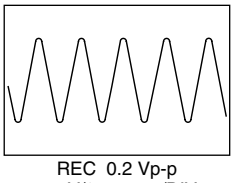
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

WF10 IC1-62



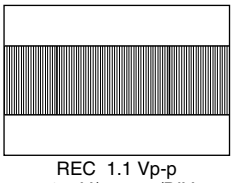
REC/PB 0.86 Vp-p
20 mV/0.5 msec/DIV

WF11 IC1-80



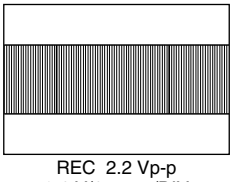
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

WF12 IC1-97



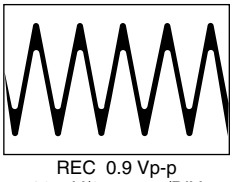
REC 1.1 Vp-p
50 mV/5 msec/DIV

WF13 IC1-105



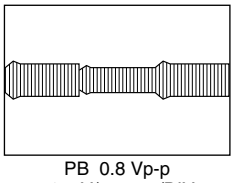
REC 2.2 Vp-p
0.1 V/1 msec/DIV

WF14 IC1-119



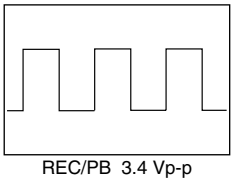
REC 0.9 Vp-p
20 mV/0.5 msec/DIV

WF15 TP2253 A.FM



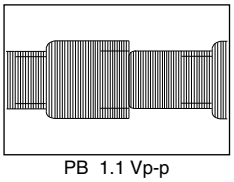
PB 0.8 Vp-p
50 mV/5 msec/DIV

WF16 TP111 D.FF



REC/PB 3.4 Vp-p
0.1 V/10 msec/DIV

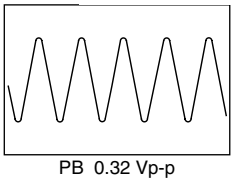
WF17 TP106 PB.FM



PB 1.1 Vp-p
20 mV/5 msec/DIV

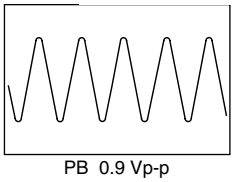
— VSC —

WF1 LPF2501-3



PB 0.32 Vp-p
10 mV/0.5 msec/DIV

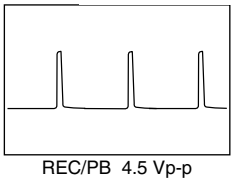
WF2 IC2501-48



PB 0.9 Vp-p
20 mV/0.5 msec/DIV

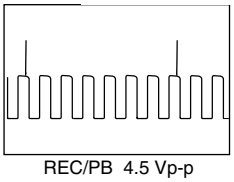
— SYSCON —

WF1 CN3001-4 D.PG



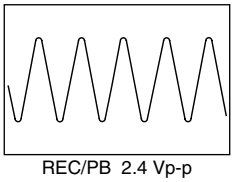
REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

WF2 CN3001-5 D.FG



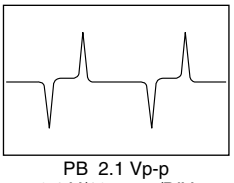
REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

WF3 CN3003-2 CAP_FG



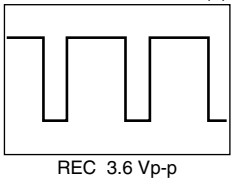
REC/PB 2.4 Vp-p
50 mV/0.5 msec/DIV

WF4 TP4001 CTL.P



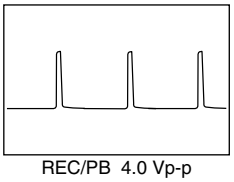
PB 2.1 Vp-p
0.1 V/10 msec/DIV

WF5 IC3001-1 CTL(+)



REC 3.6 Vp-p
0.1 V/10 msec/DIV

WF6 IC3001-98 C.SYNC



REC/PB 4.0 Vp-p
0.1 V/20 µsec/DIV

COMPONENT PARTS LOCATION GUIDE <MAIN>

REF.NO.	LOCATION
CAPACITOR	
C1	B C 13I
C2	B C 13I
C3	B C 13J
C4	B C 14J
C5	A D 13J
C6	B C 12K
C7	B C 13J
C8	B C 13J
C9	A D 14M
C10	B C 14L
C11	B C 15L
C12	B C 15L
C13	B C 15L
C14	B C 15L
C15	B C 14M
C16	B C 13L
C17	A D 12M
C18	A D 13M
C19	A D 13M
C20	A D 13M
C21	B C 12M
C22	A D 12M
C23	B C 12M
C24	B C 12N
C25	B C 11M
C26	B C 10N
C27	B C 11N
C28	A D 11M
C29	B C 10N
C30	B C 11N
C31	A D 11N
C32	A D 11M
C33	A D 9N
C34	B C 9N
C35	B C 10M
C36	A D 10N
C37	B C 10M
C38	A D 9L
C39	B C 10M
C40	A D 9M
C41	B C 8M
C42	B C 7M
C44	B C 13H
C45	A D 10L
C51	A D 16N
C52	A D 13M
C53	B C 8N
C54	B C 8N
C55	B C 10N
C56	B C 9N
C59	B C 14L
C60	A D 13H
C61	B C 13L
C62	B C 14M
C63	B C 15M
C64	B C 11O
C65	A D 13K
C69	B C 13H
C70	B C 13H
C71	B C 14G
C72	B C 15G
C73	B C 15H
C74	B C 14H
C75	B C 15G
C76	B C 15H
C77	B C 16H
C78	B C 17H
C79	B C 12N
C80	B C 12N
C81	B C 13N
C82	B C 16M
C84	B C 16L
C87	B C 13I
C88	B C 13J
C89	B C 13J
C90	B C 13J
C91	B C 12L
C92	B C 12N
C93	B C 15G
C94	B C 12O
C95	B C 12O
C96	B C 10O
C98	A D 13M
C103	B C 15G
C104	B C 12O
C105	B C 12O
C106	B C 15M
C107	B C 18H
C108	B C 11O
C109	B C 15M
C110	B C 14M
C112	B C 11N
C113	B C 11N
C114	B C 11O
C115	B C 14J
C116	B C 14I
C117	B C 15J
C118	B C 15J
C119	B C 15J
C120	B C 14J
C121	B C 14J
C122	B C 14J
C123	B C 14I
C124	B C 16I
C129	B C 15G
C130	B C 16G
C401	B C 16I
C402	B C 16J
C403	B C 16K
C404	B C 16J
C405	B C 16I
C406	B C 16J
C407	B C 16J
C409	A D 16J
C2001	A D 9K
C2002	A D 10K
C2003	A D 12J
C2004	B C 12J
C2005	A D 14J
C2006	B C 13J
C2007	A D 13J
C2008	A D 13K
C2009	B C 13K
C2010	B C 13K
C2011	A D 14L
C2012	A D 13L
C2013	B C 13K
C2021	B C 14K
C2051	B C 18K
C2061	A D 21F
C2062	B C 21F
C2063	B C 21F
C2064	A D 21G
C2101	A D 14K
C2102	A D 9M
C2103	B C 9M
C2104	B C 9L
C2121	A D 8L
C2201	B C 9L
C2202	B C 10L
C2203	A D 8M
C2204	A D 8M
C2205	A D 8M
C2206	A D 8M
C2207	A D 8L
C2208	A D 9K
C2209	A D 9K
C2210	A D 10K
C2211	A D 8K
C2212	A D 9K
C2213	A D 9J
C2214	A D 10K
C2215	A D 10K
C2216	A D 10J
C2217	A D 10J
C2218	A D 11J
C2219	A D 10J
C2220	A D 10I
C2221	B C 11I
C2222	A D 11I
C2223	A D 11I
C2224	B C 11J
C2225	A D 11I
C2226	A D 11J
C2227	B C 12I
C2228	B C 9I
C2229	B C 10J
C2230	B C 10J
C2231	B C 10M
C2232	B C 9I
C2233	B C 10I
C2251	A D 12J
C2252	B C 12J
C2253	B C 12I
C2254	B C 12I
C2255	B C 11I
C2256	A D 13I
C2501	A D 19D
C2502	B C 20C
C2503	A D 20C
C2504	B C 19C
C2505	A D 17B
C2506	B C 19D
C2507	A D 20D
C2508	B C 19D
C2509	A D 19D
C2510	A D 19B
C2511	B C 20B
C2512	B C 20C
C2513	B C 18B
C2518	B C 17C
C2519	B C 17C
C2520	B C 17B
C2521	A D 17B
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C3002	B C 7J
C3003	A D 7J
C3004	B C 7H
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C3008	B C 20E
C3010	A D 1B
C3011	A D 1B
C3012	A D 4B
C3014	A D 6A
C3015	B C 8F
C3016	B C 9D
C3017	B C 8C
C3018	B C 8C
C3019	B C 8C
C3020	B C 9C
C3021	B C 9C
C3022	B C 15C
C3024	B C 11C
C3025	A D 11C
C3026	B C 11C
C3027	B C 12C
C3028	B C 10B
C3029	B C 11B
C3030	B C 13D
C3031	B C 11D
C3032	B C 11D
C3033	B C 10F
C3034	B C 12D
C3035	B C 12D
C3036	B C 12C
C3037	B C 11C
C3038	B C 13D
C3039	B C 13D
C3040	A D 8D
C3041	B C 11C
C3042	A D 5B
C3049	B C 3A
C3054	B C 12C
C3501	B C 3C
C3502	A D 4C
C3503	B C 14G
C3504	B C 4C
C3505	B C 4C
C3602	B C 15F
C3603	B C 15E
C3604	B C 15E
C3652	B C 15C
C3653	B C 15C
C3654	B C 15C
C4001	A D 6B
C4002	B C 9E
C4003	B C 9F
C4004	B C 10F
C4005	B C 9F
C4006	B C 9F
C4007	B C 9F
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C4010	B C 7E
C4011	B C 11F
C4012	B C 11F
C4013	B C 10F
C4014	B C 10F
C4015	B C 10F
C4016	B C 10F
C4017	B C 9F
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C5002	A D 4N
C5003	A D 4P
C5004	A D 1J
C5006	A D 3M
C5101	A D 2M
C5102	A D 3K
C5103	A D 1K
C5104	A D 3L
C5105	A D 3M
C5106	A D 3L
C5107	A D 1K
C5201	A D 1G
C5202	A D 2G
C5203	A D 1G
C5204	A D 4H
C5205	A D 2H
C5206	A D 3G
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C5209	A D 3G
C5211	A D 5M
C5212	A D 4J
C5213	A D 1H
C5301	A D 2D
C5302	A D 2E
C5303	A D 3E
C5304	A D 3D
C5305	B C 1G
C5306	A D 2C
C5307	A D 2C
C5308	A D 2F
C5309	A D 2E
C5310	A D 3D
C6005	A D 21M
C6006	B C 22M
C6007	A D 20M
C6008	B C 21M
C6012	A D 21O
C6013	B C 22O
C6014	B C 22P
C6016	B C 21O
C6020	B C 22N
C6021	B C 22M
C6022	B C 22N
C6023	B C 22M
C6024	B C 22K
C6032	B C 21K
C6033	B C 22J
C6037	B C 22L
C6052	B C 22O
C6053	B C 22P
C6054	B C 22P
C6055	B C 22O
C6101	A D 21B
C6519	B C 19N
C6520	B C 19N
C6551	A D 22P
C6552	B C 22O
C6553	A D 19L
C6554	B C 22P
C6555	B C 19M
C7202	A D 19O
C7251	B C 21A
CONNECTOR	
CN1	A D 15K
CN301	A D 20J
CN302	A D 18H
CN501	A D 7O
CN502	A D 18O
CN901	A D 22A
CN902	A D 21A
CN903	A D 14P
CN904	A D 19P
CN905	A D 16P
CN907	A D 8P
CN1901	A D 22C
CN2001	A D 14L
CN2002	A D 20G
CN2051	A D 18L
CN3001	A D 6L
CN3002	A D 8J
CN3003	A D 8H
CN3004	A D 10A
CN3011	A D 3A
CN3012	A D 2C
CN3501	A D 14H
CN5001	A D 1P
CN6102	A D 21C
CN6103	A D 21H
CN6701	A D 18M
CN7103	A D 22E
DIODE	
D1	B C 19K
D3	B C 10O
D4	A D 14M
D5	B C 13M
D6	A D 7N
D7	A D 13C
D8	A D 12N
D9	B C 15F
D10	B C 7H
D2001	B C 18I
D2121	A D 8L
D2201	A D 9M
D2501	A D 20D
D3001	A D 13D
D3002	A D 5D
D3003	A D 3B
D3004	A D 4A
D3005	A D 4A
D3006	A D 5J
D3007	B C 7D
D3008	B C 7D
D3009	A D 12B
D3011	A D 2B
D3012	A D 1C
D4001	B C 11E
D4002	B C 11F
D5001	B C 3N
D5101	A D 1L
D5102	A D 2L
D5103	A D 2K
D5104	A D 4N
D5201	A D 1I
D5202	A D 4H
D5203	A D 4I
D5204	A D 3I
D5205	A D 3I
D5206	A D 2H
D5207	A D 2H
D5208	A D 3G
D5209	A D 3H
D5210	A D 4I
D5211	A D 1I
D5212	A D 2I
D5213	A D 5L
D5214	A D 4I
D5301	A D 3H
D5302	A D 2D
D5303	A D 1E
D5304	A D 1F
D5305	A D 4G
D5306	A D 2D
D5307	A D 3F
D5308	A D 2F
D5309	A D 3C
D5310	A D 2E
D5314	A D 3G
D5315	A D 5G
D5316	A D 3F
D5317	A D 7H
D6002	A D 22L
D6551	A D 22O
IC	
IC1	B C 11L
IC2	B C 16H
IC3	B C 14J
IC2501	B C 18C
IC3001	B C 10D
IC3002	B C 12C
IC3003	A D 15C
IC3004	A D 7J
IC3501	A D 4C
IC3601	B C 15F
IC3651	B C 16C
IC5101	A D 2L
IC5301	A D 1D
IC6080	B C 22N
COIL	
L1	A D 13J
L2	A D 15L
L3	A D 14N
L4	A D 11N
L5	A D 9M
L11	A D 11N
L12	A D 11M
L13	A D 11O
L14	A D 12N
L15	A D 14H
L17	A D 15G
L18	A D 15H
L19	A D 15H
L20	A D 16L
L22	A D 12M
L24	A D 15M
L25	A D 18H
L26	A D 18H
L27	A D 12O
L28	A D 14M
L29	A D 14H
L401	A D 16J
L402	A D 19G
L2001	A D 12J
L2251	A D 13I
L2252	A D 11I
L2501	A D 17B
L3001	A D 6J
L3011	A D 7J
L3012	A D 7J
L3501	A D 3C
L5201	A D 2G
L5202	A D 1F
L6001	A D 20N
L6002	A D 21P
L6003	A D 21O
L6004	A D 20P
L6005	A D 20N
L6031	B C 21L
L6032	A D 22J
L6050	A D 22N
L7201	A D 19O
TRANSISTOR	
Q1	B C 14I
Q2	B C 14I
Q3	B C 14J
Q4	B C 14J
Q5	B C 13L
Q7	B C 15G
Q8	B C 15H
Q9	B C 15H
Q10	B C 8N
Q11	B C 9N
Q12	B C 8N
Q13	B C 8N
Q14	B C 15G
Q16	B C 16L
Q17	B C 16L
Q18	B C 16M
Q21	B C 12O
Q24	B C 7N
Q25	B C 9N
Q26	B C 9N
Q28	B C 16M
Q31	B C 19I
Q32	B C 13M
Q34	B C 12N
Q35	B C 13M
Q37	B C 13N
Q38	B C 15M
Q39	B C 11O
Q40	B C 11N
Q41	B C 11O
Q42	B C 7H
Q43	B C 14E
Q401	B C 16J
Q402	B C 16J
Q403	B C 16I
Q404	B C 18F
Q405	B C 19G
Q2001	B C 14L
Q2002	B C 14K
Q2003	B C 14L
Q2004	B C 14K
Q2011	B C 14K
Q2052	B C 18H
Q2053	B C 18H
Q2054	B C 19H
Q2061	B C 21G
Q2062	B C 19H
Q2102	B C 14K
Q2103	B C 9M
Q2104	B C 8M
Q2105	B C 8M
Q2106	B C 8M
Q2107	B C 8M
Q2108	B C 9M
Q2251	B C 10I
Q2252	B C 10I
Q2501	B C 20D
Q2502	B C 20D
Q3001	B C 7J
Q3002	A D 5E
Q3003	A D 20E
Q3004	B C 3B
Q3005	B C 4B
Q3007	B C 7D
Q3009	B C 7D
Q3501	B C 4C
Q4001	B C 8E
Q4002	B C 10F
Q4003	B C 9F
Q5101	A D 3L
Q5102	B C 3L
Q5103	B C 4M
Q5301	A D 3F
Q5302	B C 3F
Q5303	A D 2D
Q5304	A D 2E
Q5305	B C 3E
Q5306	A D 3F
Q5310	B C 3C
Q5311	B C 4F
Q5312	A D 1D
Q5318	B C 2C
Q5320	A D 4G
Q5321	B C 4F
Q5322	B C 4D
Q6030	B C 22I
Q6031	B C 22J
Q6032	B C 21J
Q6501	B C 19N
Q6502	B C 18N
Q6551	A D 22O
Q7201	A D 20P
RESISTOR	
R1	B C 14L
R2	B C 14L
R3	B C 15L
R4	B C 12N
R5	B C 12N
R6	B C 11M
R7	B C 10N
R8	B C 8M
R9	B C 8M
R21	B C 13G
R22	B C 13G
R23	B C 14L
R24	B C 14G
R25	B C 15G
R26	B C 14G
R27	B C 15G
R28	B C 14H
R29	B C 15G
R30	B C 15H
R31	B C 15H
R32	B C 15G
R33	B C 16L
R34	B C 16L
R35	B C 15L
R36	B C 8N
R37	B C 10N
R38	B C 10N
R39	B C 9N
R40	B C 8N
R41	B C 8N
R42	B C 8N
R43	B C 8N
R44	B C 7N
R45	B C 7N
R46	B C 12O
R47	B C 12N
R48	B C 12O
R51	B C 8N
R54	B C 15M
R61	B C 19I
R62	B C 16M
R65	B C 13L
R66	B C 13M
R68	B C 17I
R69	B C 13N
R70	B C 14M
R72	B C 12O
R73	B C 12O
R75	B C 14M
R76	B C 11O
R77	B C 13J
R79	B C 10M
R80	B C 12O
R81	B C 10N
R82	B C 16M
R84	B C 16N
R85	B C 16L
R88	B C 8N
R90	B C 14M
R91	B C 13N
R92	B C 15M
R93	B C 15M
R94	B C 9N
R98	B C 14E
R99	B C 15E
R104	B C 15M
R113	B C 13L
R114	B C 16O
R115	B C 7G
R401	B C 16J
R402	B C 16J
R403	B C 16J
R404	B C 16I
R405	B C 16I
R406	B C 16I
R407	B C 19G
R408	B C 19F
R409	B C 15F
R2001	B C 7L
R2002	B C 7M
R2003	A D 7K
R2005	A D 9I
R2006	A D 10I
R2007	B C 8J
R2008	B C 9J
R2009	B C 10J
R2010	B C 10K
R2011	B C 14K
R2012	B C 11I
R2013	B C 13K
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R2020	B C 14K
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R2052	B C 18L
R2053	B C 18L
R2056	B C 18L
R2057	B C 18H
R2058	B C 18H
R2059	B C 19H
R2060	B C 19H
R2061	B C 21F
R2062	B C 21F
R2063	B C 21G
R2064	B C 19H
R2065	B C 18G
R2102	B C 13K
R2103	B C 9M
R2104	B C 9M
R2105	B C 9M
R2106	B C 8M
R2107	B C 7L
R2108	B C 8M
R2109	B C 8M
R2110	B C 8M
R2111	B C 9M
R2121	A D 8L
R2202	B C 8K
R2203	B C 9K
R2204	B C 9K
R2205	B C 9K
R2206	A D 7K
R2208	A D 8K
R2209	A D 8K
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R2214	B C 9J
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R2216	A D 10J
R2217	B C 10I
R2218	B C 10I
R2219	A D 9J
R2220	A D 9J
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R2222	B C 10J
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R2224	B C 9J
R2225	B C 9J
R2226	B C 9H
R2227	B C 9I
R2228	B C 10L
R2229	A D 10L
R2230	B C 10K
R2231	A D 9L
R2251	B C 6L
R2252	B C 11I
R2501	B C 20C
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R2503	B C 20C
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R2522	B C 17C
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R3017	A D 8F
R3018	A D 7F
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R3042	B C 9D
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R3106	B C 11F
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R3203	B C 7J
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R3208	B C 17A
R3209	B C 17A
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R3234	B C 7D
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R3247	B C 7E
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R3506	B C 4C
R3671	B C 16C
R3672	B C 16C
R3673	B C 16C
R4001	B C 12F
R4003	B C 10F
R4004	B C 10F
R4005	B C 9F
R4007	B C 8F
R4008	B C 8E
R4009	B C 11E
R4010	B C 12F
R4011	B C 11F
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R4015	B C 11F
R4016	B C 11E
R4017	B C 10F
R4018	B C 10F
R4019	B C 11F
R4020	B C 10G
R4021	B C 10G
R5001	A D 4P
R5101	A D 4N
R5102	A D 2K
R5103	B C 2L
R5104	A D 1L
R5105	A D 2L
R5106	B C 3K
R5107	A D 4M
R5108	A D 3M
R5109	A D 3L
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R5303	B C 4E
R5304	A D 1G
R5305	B C 5L
R5306	B C 3D
R5307	B C 1G
R5308	B C 3F
R5309	A D 3F
R5310	B C 2F
R5311	B C 2F
R5313	A D 1C
R5314	B C 2C
R5317	B C 4E
R5318	B C 3F
R5319	A D 2C
R5321	A D 3E
R5322	B C 3E
R5323	B C 3F
R5326	B C 3D
R5327	B C 3D
R5328	B C 5M
R5329	B C 4D
R5330	B C 4D
R5332	B C 5B
R5333	A D 4H
R5334	A D 5I
R5335	B C 5G
R5336	B C 4F
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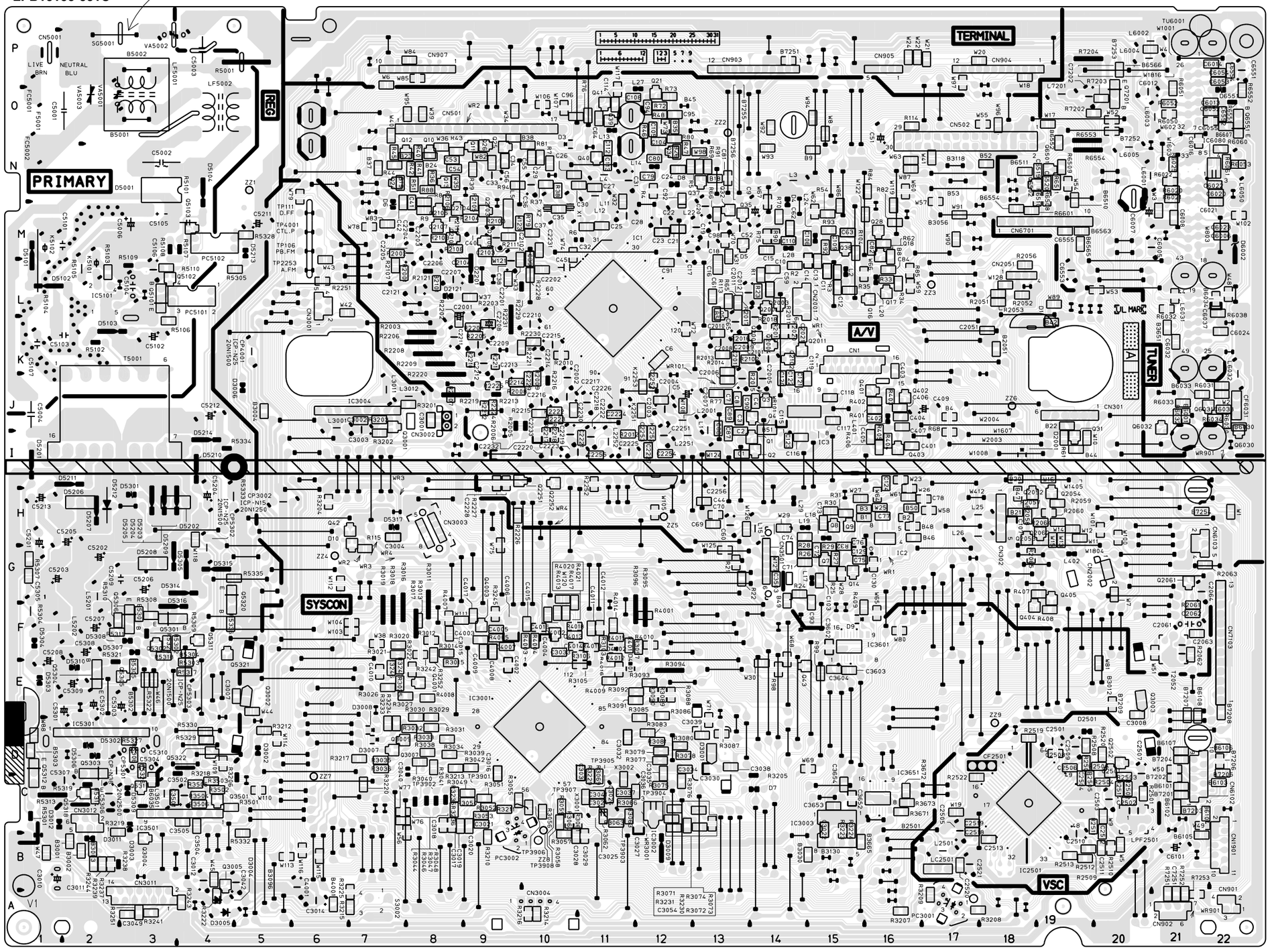
R6021	B C 21N
R6022	B C 21N
R6025	B C 21N
R6030	B C 22J
R6031	B C 22J
R6032	B C 21L
R6033	B C 21J
R6034	B C 22J
R6038	B C 22L
R6050	B C 21O
R6051	B C 21O
R6052	B C 21O
R6053	B C 22N
R6060	B C 22N
R6061	B C 22N
R6508	B C 19N
R6509	B C 19N
R6510	B C 19N
R6511	B C 19N
R6551	A D 22O
R6552	B C 22O
R6553	A D 20O
R6554	A D 20N
R6601	B C 18M
R7202	B C 20O
R7203	B C 20O
R7204	A D 19P
R7251	B C 21A
R7252	B C 21A
R7253	B C 21A
TEST POINT	
TP106	A D 6M
TP111	A D 6M
TP2253	A D 6L
TP3901	B C 9C
TP3902	B C 8C
TP3903	B C 11C
TP3904	B C 12C
TP3905	B C 11C
TP3906	B C 10C
TP3907	B C 10C
TP3908	B C 10C
TP4001	A D 6M
OTHER	
CF2501	A D 17D
CF6031	A D 22J
CP3002	A D 6H
CP4001	A D 5K
CP5301	A D 2D
CP5302	A D 4H
CP5303	A D 4E
F5001	A D 1P
FC5001	A D 1P
FC5002	A D 1N
K2251	B C 12J
K2252	B C 12I
K2253	B C 12J
K5101	A D 2L
K5102	A D 1M
LC2501	A D 17B
LF5001	A D 2P
LF5002	A D 5O
LPF2501	A D 20C
PC3001	A D 17A
PC3002	A D 9C
PC5101	A D 4L
PC5102	A D 5M
S3002	A D 7A
SG5001	A D 2P
T2052	A D 21F
T5001	A D 2J
TU6001	A D 21P
VA5001	A D 2P
VA5002	A D 4P
VA5003	A D 2P
WR1	A D 16G
WR2	A D 7G
WR3	A D 7G
WR4	A D 7G
WR101	A D 14J
WR901	A D 21A
WR3001	A D 12C
X1	A D 10N
X2	A D 10M
X3001	A D 11C
X3002	A D 11C

4.15 MAIN, AUDIO ERASE, A/C HEAD AND LOADING MOTOR CIRCUIT BOARDS

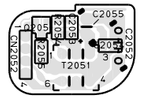
• CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD ,REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).

• ATTENTION:
POUR UNE PROTECTION PERMANENTE CONTRE LES RISQUE D'INCENDE, REMPLACER LES FUSIBLES PAR UN AUTRE DE MEME TYPE ET DE MEME TENSION.

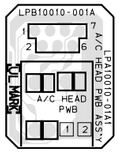
<03>MAIN
LPB10106-001C



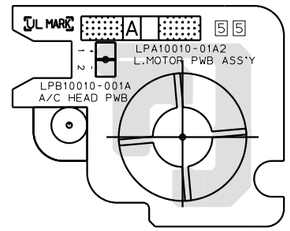
<46>AUDIO ERASE
LPB10106-001C



<12>A/C HEAD
LPB10010-001A



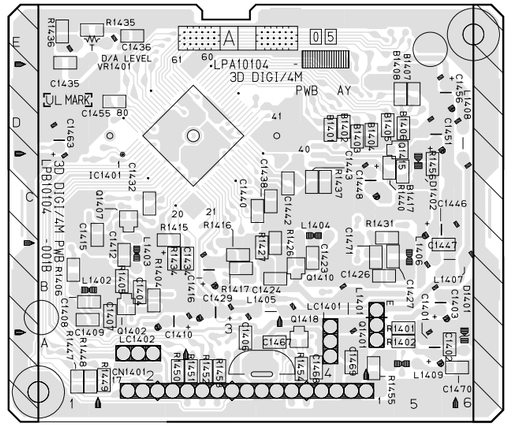
<55>LOADING MOTOR
LPB10010-001A



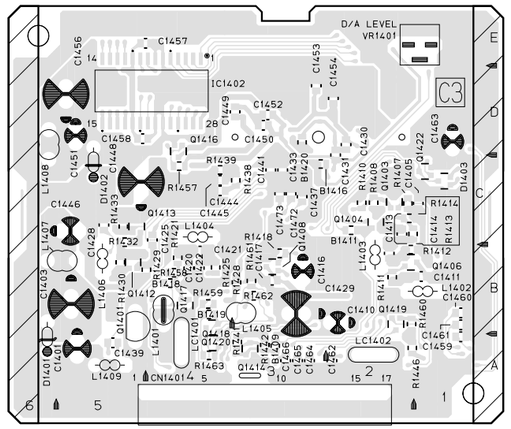
4.16 3D DIGITAL/4M CIRCUIT BOARD

<05> 3D DIGITAL/4M
LPB10104-001B

— FOIL SIDE(B) —



— COMPONENT SIDE(A) —

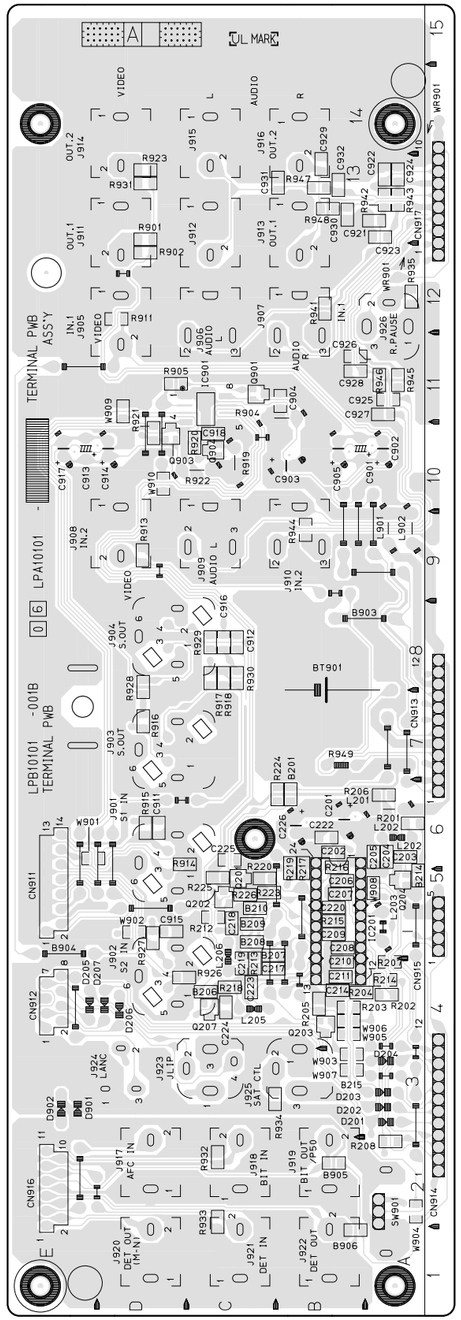


COMPONENT PARTS LOCATION GUIDE
<3D DIGITAL/4M>

REF.NO.	LOCATION		
CAPACITOR			
C1401	A	D	5A
C1402	B	C	5A
C1403	A	D	5B
C1404	B	C	2B
C1405	A	C	1C
C1406	B	C	3A
C1407	B	C	2B
C1408	B	C	1B
C1409	B	C	1B
C1410	A	D	2B
C1411	A	C	1B
C1412	B	C	2B
C1413	A	C	2B
C1414	A	C	2C
C1415	B	C	1C
C1416	A	D	3B
C1417	A	C	3B
C1420	A	C	4B
C1421	A	C	4B
C1422	A	C	4B
C1423	B	C	4B
C1424	B	C	3B
C1425	A	C	4C
C1426	B	C	5B
C1427	B	C	5B
C1428	A	C	5C
C1429	A	D	3B
C1430	A	C	2D
C1431	A	C	2D
C1432	B	C	2C
C1433	A	C	3C
C1434	B	C	3B
C1435	B	C	1E
C1436	B	C	2E
C1437	A	C	3C
C1438	B	C	3C
C1439	A	C	5A
C1440	B	C	3C
C1441	A	C	3C
C1442	B	C	4C
C1443	B	C	4C
C1444	A	C	4C
C1445	A	C	4C
C1446	A	D	5C
C1447	B	C	5B
C1448	A	D	5C
C1449	A	C	4D
C1450	A	C	3D
C1451	A	D	5D
C1452	A	C	3D
C1453	A	C	3D
C1454	A	C	2D
C1455	B	C	2D
C1456	A	D	5D
C1457	A	C	5E
C1458	A	C	5D
C1459	A	C	1A
C1460	A	C	1B
C1461	A	C	1B
C1462	A	C	2A
C1463	A	D	1D
C1464	A	C	3A
C1465	A	C	3A
C1466	A	C	3A
C1467	B	C	3A
C1468	B	C	4A
C1469	B	C	4A
C1470	B	C	6A
C1471	B	C	5B
C1472	A	C	3C
C1473	A	C	3C
CONNECTOR			
CN1401	A	D	5A
DIODE			
D1401	A	D	6B
D1402	A	D	5D
D1403	A	C	1C
IC			
IC1401	B	C	3D
IC1402	A	C	4D
COIL			
L1401	A	D	4B
L1402	A	D	1B
L1403	A	D	2B
L1404	A	D	4C
L1405	A	D	4B
L1406	A	D	5B
L1407	A	D	6B
L1408	A	D	6C
L1409	A	D	5A
TRANSISTOR			
Q1401	A	D	5B
Q1402	B	C	2B
Q1403	A	C	2C
Q1404	A	C	2C
Q1406	A	C	2B
Q1407	B	C	2C
Q1408	A	C	3B
Q1410	B	C	4B
Q1412	A	C	5C
Q1413	A	C	5B
Q1414	A	C	4D
Q1415	B	C	5A
Q1416	A	C	4D
Q1417	A	C	4B
Q1418	B	C	4A
Q1419	A	C	2B
Q1420	A	C	4A
Q1421	A	C	4B
Q1422	A	C	1C
RESISTOR			
R1401	B	C	5B
R1402	B	C	5A
R1404	B	C	2B
R1405	B	C	2B
R1406	B	C	1B
R1407	A	C	2C
R1408	A	C	2C
R1410	A	C	2C
R1411	A	C	2B
R1412	A	C	2B
R1413	A	C	2C
R1414	A	C	2C
R1415	B	C	2C
R1416	B	C	3B
R1417	B	C	3B
R1418	A	C	3B
R1421	A	C	4B
R1425	A	C	4B
R1426	B	C	3C
R1427	B	C	3B
R1428	A	C	3B
R1429	A	C	4B
R1430	A	C	5B
R1431	B	C	5C
R1432	A	C	5C
R1433	A	C	5C
R1434	B	C	2B
R1435	B	C	1E
R1436	B	C	1E
R1437	B	C	4C
R1438	A	C	3C
R1439	A	C	4C
R1440	B	C	5C
R1441	A	C	3A
R1442	A	C	3A
R1446	A	C	2A
R1447	B	C	1A
R1448	B	C	1A
R1449	B	C	2A
R1450	B	C	2A
R1451	B	C	3A
R1452	B	C	3A
R1453	B	C	3A
R1454	B	C	4A
R1455	B	C	5A
R1456	B	C	5C
R1457	A	C	4C
R1458	A	C	4B
R1459	A	C	4B
R1460	A	C	2B
R1461	A	C	3B

4.17 TERMINAL CIRCUIT BOARD

<06>TERMINAL
LPB10101-001B



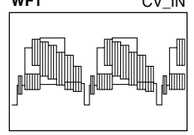
COMPONENT PARTS LOCATION GUIDE
<TERMINAL>

REF.NO.	LOCATION		
CAPACITOR			
C201	A	D	6B
C202	B	C	6B
C203	B	C	6A
C204	B	C	6A
C205	B	C	6A
C206	B	C	5B
C207	B	C	5B
C208	B	C	5B
C209	B	C	5B
C210	B	C	4B
C211	B	C	4B
C214	B	C	4B
C217	B	C	4C
C218	B	C	5C
C219	B	C	4C
C220	B	C	5B
C222	B	C	6B
C223	B	C	4C
C224	B	C	4C
C225	B	C	6C
C226	A	D	6B
C901	A	D	10B
C902	A	D	10A
C903	A	D	10B
C904	B	C	11B
C905	A	D	10B
C911	B	C	6D
C912	B	C	8C
C913	A	D	10E
C914	A	D	10D
C915	B	C	5D
C916	B	C	8C
C917	A	D	10E
C918	B	C	10C
C921	B	C	13A
C922	B	C	13A
C923	B	C	13A
C924	B	C	13A
C925	B	C	11A
C926	B	C	11B
C927	B	C	11A
C928	B	C	11B
C929	B	C	13B
C930	B	C	13B
C931	B	C	13B
C932	B	C	13B
CONNECTOR			
CN911	A	D	5E
CN912	A	D	4E
CN913	A	D	6A
CN914	A	D	2A
CN915	A	D	5A
CN916	A	D	2E
CN917	A	D	12A
DIODE			
D201	A	D	3A
D202	A	D	3A
D203	A	D	3A
D204	A	D	3A
D205	A	D	4E
D206	A	D	4D
D207	A	D	4D
D901	A	D	3E
D902	A	D	3E
IC			
IC201	A	D	6B
IC901	B	C	11C
JACK			
J901	A	D	6D
J902	A	D	4D
J903	A	D	7D
J904	A	D	8D
J905	A	D	12D
J906	A	D	12C
J907	A	D	12B
J908	A	D	9D
J909	A	D	9C
J910	A	D	9B
J911	A	D	13D
J912	A	D	13C
J913	A	D	13B
J914	A	D	14D
J915	A	D	14C
J916	A	D	14B
J917	A	D	2D
J918	A	D	2C
J919	A	D	2B
J920	A	D	1D
J921	A	D	1C
J922	A	D	1B
J923	A	D	3C
J924	A	D	3D
J925	A	D	3B
J926	A	D	12A
COIL			
L201	A	D	6A
L202	A	D	6A
L203	A	D	5A
L205	A	D	4C
L206	A	D	4C
L901	A	D	9A
L902	A	D	9A
TRANSISTOR			
Q201	B	C	5C
Q202	B	C	5C
Q203	B	C	4B
Q204	B	C	5A
Q207	B	C	4C
Q901	B	C	11C
Q903	B	C	10D
Q904	B	C	10C
RESISTOR			
R201	B	C	6A
R202	B	C	4A
R203	B	C	4B
R204	B	C	4B
R205	B	C	4B
R206	B	C	6A
R207	B	C	4A
R208	B	C	2A
R212	B	C	5C
R213	B	C	4C
R214	B	C	4A
R215	B	C	5B
R216	B	C	6B
R217	B	C	6B
R218	B	C	4C
R219	B	C	6B
R220	B	C	5C
R223	B	C	5C
R224	B	C	6B
R225	B	C	5C
R226	B	C	5C
R901	B	C	13D
R902	B	C	12D
R904	A	D	11B
R905	B	C	11D
R911	B	C	12D
R913	B	C	9D
R914	B	C	6D
R915	B	C	6D
R916	B	C	7D
R917	B	C	8C
R918	B	C	8C
R919	A	D	10C

WAVEFORMS

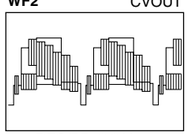
— TERMINAL —

WF1 IC201-15 CV_IN



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

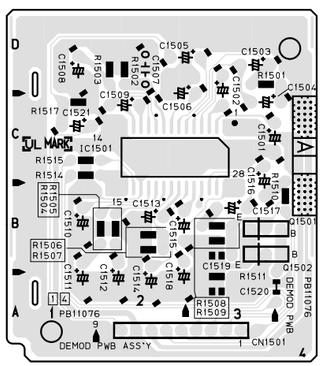
WF2 IC201-13 CVOUT



REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

4.18 DEMODULATOR CIRCUIT BOARD

<14>DEMOD
PB11076

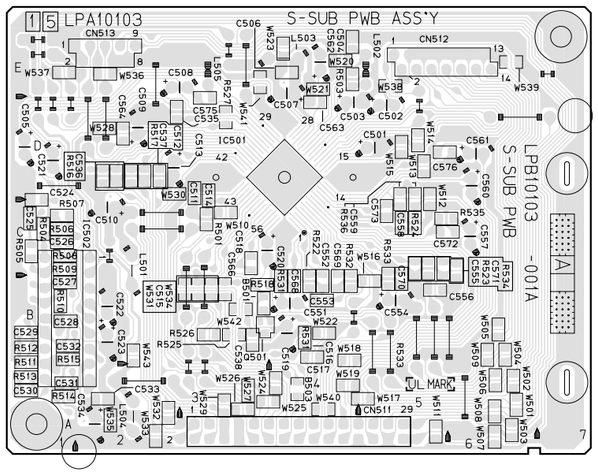


COMPONENT PARTS LOCATION GUIDE
<DEMODULATOR>

REF.NO.	LOCATION		
CAPACITOR			
C1501	A	D	4C
C1502	A	D	3D
C1503	A	D	4D
C1504	A	D	4C
C1505	A	D	3D
C1506	A	D	3C
C1507	A	D	2C
C1508	A	D	1D
C1509	A	D	2C
C1510	A	D	1B
C1511	A	D	1A
C1512	A	D	2A
C1513	A	D	2B
C1514	A	D	2A
C1515	A	D	3B
C1516	A	D	3C
C1517	A	D	3B
C1518	A	D	3A
C1519	A	D	3B
C1520	A	D	3A
C1521	A	D	2C
CONNECTOR			
CN1501	A	D	3A
IC			
IC1501	B	C	2C
TRANSISTOR			
Q1501	A	D	3B
Q1502	A	D	3B
RESISTOR			
R1501	A	D	4C
R1502	A	D	2C
R1503	A	D	2C
R1504	A	D	2B
R1505	A	D	2B
R1506	A	D	2B
R1507	A	D	2B
R1508	A	D	3B
R1509	A	D	3B
R1510	A	D	4B
R1511	A	D	3A
R1514	A	D	2B
R1515	A	D	2C
R1517	A	D	2C

4.19 S-SUB CIRCUIT BOARD

<15>S-SUB
LPB10103-001A

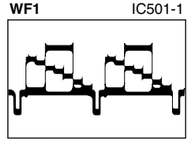


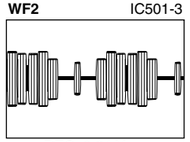
COMPONENT PARTS LOCATION GUIDE
<S-SUB>

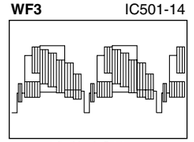
REF.NO.	LOCATION		
CAPACITOR			
C501	A	D	5D
C502	A	D	5D
C503	A	D	4D
C504	B	C	4E
C505	A	D	1D
C506	B	C	4E
C507	A	D	4E
C508	A	D	2E
C509	A	D	2D
C510	A	D	2C
C511	B	C	3C
C512	B	C	2D
C513	A	D	2D
C514	B	C	3C
C515	B	C	3B
C516	B	C	4B
C517	B	C	4B
C518	B	C	3C
C519	A	D	4B
C520	A	D	3C
C521	A	D	1D
C522	A	D	2B
C523	A	D	2B
C524	B	C	1C
C525	B	C	1C
C526	B	C	1C
C527	B	C	1B
C528	B	C	1B
C529	B	C	1B
C530	B	C	1A
C531	B	C	1A
C532	B	C	1B
C533	B	C	2A
C534	A	D	2A
C535	B	C	2D
C536	B	C	2D
C537	B	C	2D
C538	B	C	3B
C551	A	D	4B
C552	B	C	4B
C553	B	C	4B
C554	A	D	5B
C555	B	C	5C
C556	B	C	5B
C557	A	D	6C
C558	B	C	5C
C559	B	C	5C
C560	A	D	6D
C561	A	D	6D
C562	A	D	4E
C563	B	C	4D
C564	B	C	2D
C566	B	C	3B
C568	B	C	4B
C569	B	C	4B
C570	B	C	5B
C571	B	C	5C
C572	B	C	6C
C573	B	C	5C
C575	B	C	3D
C576	B	C	5D
CONNECTOR			
CN511	A	D	3A
CN512	A	D	5E
CN513	A	D	1E
IC			
IC501	B	C	4D
IC502	A	D	1C
COIL			
L501	A	D	2B
L502	A	D	5E
L503	A	D	3E
L504	A	D	2A
L505	A	D	3E
TRANSISTOR			
Q501	B	C	3B
RESISTOR			
R501	B	C	3C

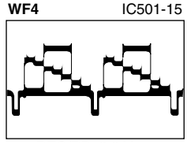
WAVEFORMS

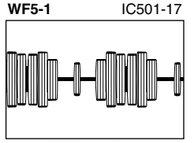
— S-SUB —

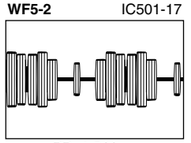
WF1 IC501-1

REC 1.0 Vp-p
20 mV/20 µsec/DIV

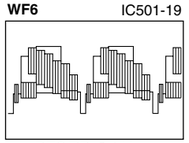
WF2 IC501-3

REC 0.64 Vp-p
20 mV/20 µsec/DIV

WF3 IC501-14

REC 1.0 Vp-p
20 mV/20 µsec/DIV

WF4 IC501-15

REC/PB 2.0 Vp-p
50 mV/20 µsec/DIV

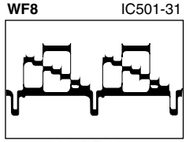
WF5-1 IC501-17

REC 1.3 Vp-p
50 mV/20 µsec/DIV

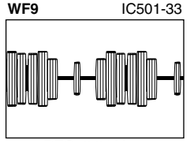
WF5-2 IC501-17

PB 1.2 Vp-p
50 mV/20 µsec/DIV

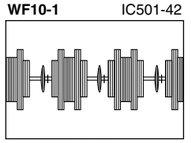
WF6 IC501-19

REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

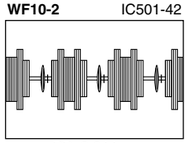
WF7 IC501-29

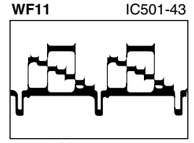
REC/PB 0.5 Vp-p
10 mV/20 µsec/DIV

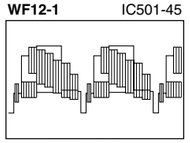
WF8 IC501-31

PB 0.5 Vp-p
10 mV/20 µsec/DIV

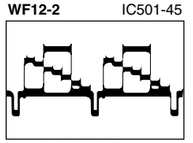
WF9 IC501-33

REC 0.64 Vp-p
20 mV/20 µsec/DIV

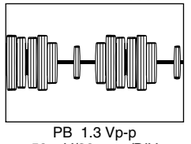
WF10-1 IC501-42

REC 0.52 Vp-p
20 mV/20 µsec/DIV

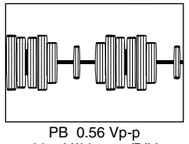
WF10-2 IC501-42

PB 0.6 Vp-p
20 mV/20 µsec/DIV

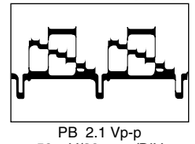
WF11 IC501-43

REC/PB 0.76 Vp-p
20 mV/20 µsec/DIV

WF12-1 IC501-45

REC 1.7 Vp-p
50 mV/20 µsec/DIV

WF12-2 IC501-45

REC/PB 1.7 Vp-p
50 mV/20 µsec/DIV

WF13 IC501-47

PB 1.3 Vp-p
50 mV/20 µsec/DIV

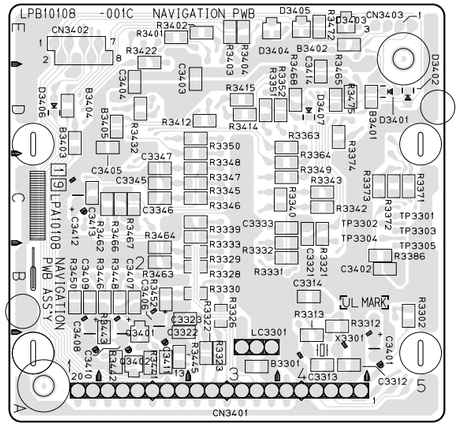
WF14 IC501-48

PB 0.56 Vp-p
20 mV/20 µsec/DIV

WF15 IC501-56

PB 2.1 Vp-p
50 mV/20 µsec/DIV

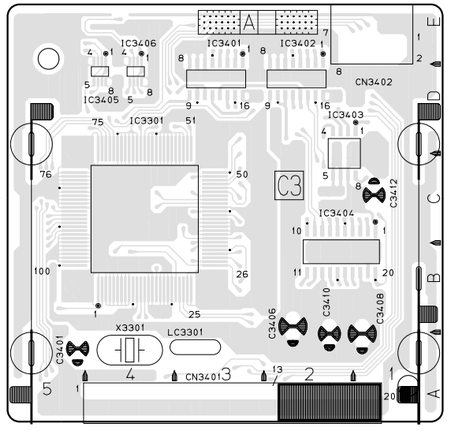
4.20 NAVIGATION CIRCUIT BOARD

<19> NAVIGATION
LPB10108-001C

– FOIL SIDE(B) –



– COMPONENT SIDE(A) –



COMPONENT PARTS LOCATION GUIDE <NAVIGATION>

REF.NO.	LOCATION		
CAPACITOR			
C3312	B	C	4A
C3313	B	C	4A
C3314	B	C	4B
C3321	B	C	4C
C3322	B	C	2B
C3323	B	C	2B
C3333	B	C	4C
C3345	B	C	2C
C3346	B	C	2C
C3347	B	C	2C
C3401	A	D	5A
C3402	B	C	5B
C3403	B	C	3D
C3404	B	C	2D
C3405	B	C	2D
C3406	A	D	2B
C3407	B	C	2B
C3408	A	D	1B
C3409	B	C	1B
C3410	A	D	2B
C3411	B	C	2A
C3412	A	D	1C
C3413	B	C	1C
C3414	B	C	4D

REF.NO.	LOCATION		
CONNECTOR			
CN3401	A	D	4A
CN3402	A	D	1E
DIODE			
D3401	B	C	5D
D3402	B	C	5D
D3403	B	C	4E
D3404	B	C	3E
D3405	B	C	4E
D3406	B	C	1D
D3407	B	C	4D
IC			
IC3301	A	C	4C
IC3401	A	C	3D
IC3402	A	C	2D
IC3403	A	C	2D
IC3404	A	C	2B
IC3405	A	C	4D
IC3406	A	C	4D
TRANSISTOR			
Q3401	B	C	2B
Q3402	B	C	2A
RESISTOR			
R3302	B	C	5B

REF.NO.	LOCATION		
R3312	B	C	4B
R3313	B	C	4A
R3321	B	C	4C
R3322	B	C	3A
R3323	B	C	3A
R3326	B	C	3B
R3328	B	C	3B
R3329	B	C	3B
R3330	B	C	3B
R3331	B	C	4B
R3332	B	C	4C
R3333	B	C	3C
R3339	B	C	3C
R3340	B	C	4C
R3342	B	C	4C
R3345	B	C	3C
R3346	B	C	3C
R3347	B	C	3C
R3348	B	C	3D
R3349	B	C	4C
R3350	B	C	3D
R3351	B	C	3D
R3352	B	C	4D
R3363	B	C	4D
R3364	B	C	4C

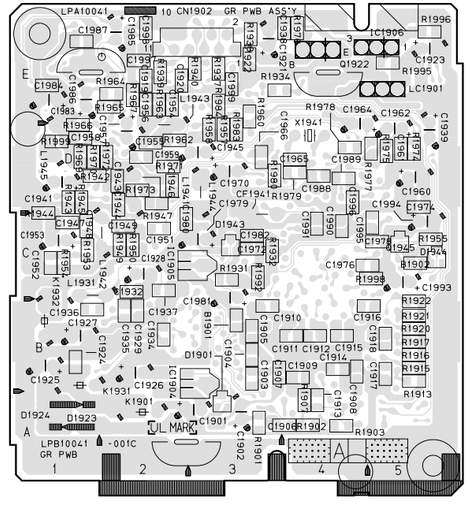
REF.NO.	LOCATION		
R3371	B	C	5C
R3372	B	C	5C
R3373	B	C	5C
R3374	B	C	4D
R3386	B	C	5B
R3401	B	C	2E
R3402	B	C	3E
R3403	B	C	3E
R3404	B	C	3E
R3412	B	C	3D
R3414	B	C	3D
R3415	B	C	3D
R3422	B	C	2E
R3432	B	C	2D
R3441	B	C	2A
R3442	B	C	2A
R3443	B	C	2B
R3445	B	C	2A
R3446	B	C	2B
R3448	B	C	2B
R3450	B	C	1B
R3452	B	C	2B
R3462	B	C	2C
R3463	B	C	2B
R3464	B	C	2B
R3465	B	C	4D

REF.NO.	LOCATION		
R3466	B	C	2C
R3467	B	C	2C
R3468	B	C	4D
R3472	B	C	4E
R3475	B	C	4D
TESTPOINT			
TP3301	B	C	5C
TP3302	B	C	5C
TP3303	B	C	5C
TP3304	B	C	5C
TP3305	B	C	5B
OTHER			
LC3301	A	D	3A
X3301	A	D	4A

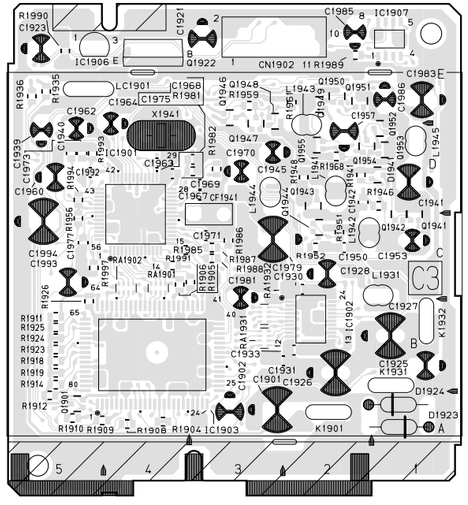
4.21 GR CIRCUIT BOARD

<96>GR
LPB10041-001C

– FOIL SIDE(B) –



– COMPONENT SIDE(A) –



COMPONENT PARTS LOCATION GUIDE <GR>

REF.NO.	LOCATION		
CAPACITOR			
C1901	A	D	2B
C1902	A	D	3A
C1903	B	C	3B
C1904	B	C	3B
C1905	B	C	3B
C1906	B	C	3A
C1907	B	C	3B
C1908	B	C	4B
C1909	B	C	3B
C1910	B	C	3C
C1911	B	C	3B
C1912	B	C	4B
C1913	B	C	4B
C1914	B	C	4B
C1915	B	C	4B
C1916	B	C	4C
C1917	B	C	4B
C1918	B	C	4B
C1919	B	C	2E
C1920	B	C	2E
C1921	A	D	3F
C1922	B	C	3E
C1923	A	D	5F
C1924	B	C	1B
C1925	A	D	1B
C1926	A	D	2B
C1927	A	D	1B
C1928	A	D	2C
C1929	B	C	2C
C1930	A	C	2C
C1931	A	C	2B
C1932	B	C	2C

REF.NO.	LOCATION		
C1933	A	C	2B
C1934	B	C	2B
C1935	B	C	2C
C1936	B	C	1C
C1937	B	C	2C
C1938	B	C	3F
C1939	A	D	5E
C1940	A	C	5D
C1941	A	D	1D
C1942	A	C	1D
C1943	B	C	1D
C1944	B	C	1D
C1945	A	D	2D
C1946	B	C	2D
C1947	B	C	1D
C1948	B	C	1D
C1949	B	C	2D
C1950	A	C	2C
C1951	B	C	2D
C1952	B	C	1C
C1953	A	D	1C
C1954	B	C	2E
C1955	B	C	2E
C1956	B	C	2E
C1957	A	D	2E
C1958	B	C	1E
C1959	B	C	2D
C1960	A	D	5D
C1961	B	C	5D
C1962	A	D	5E
C1963	A	C	4D
C1964	A	D	4E
C1965	B	C	3D

REF.NO.	LOCATION		
C1966	B	C	3D
C1967	A	C	3D
C1968	A	C	3D
C1969	A	C	3D
C1970	A	D	3D
C1971	A	C	3C
C1972	B	C	3C
C1973	A	C	4D
C1974	B	C	5D
C1975	A	C	3D
C1976	B	C	4C
C1977	A	C	4C
C1978	B	C	4C
C1979	A	D	2C
C1980	B	C	2D
C1981	A	D	3C
C1982	B	C	3C
C1983	A	D	1E
C1984	B	C	1E
C1985	A	D	1F
C1986	A	D	1E
C1987	B	C	1F
C1988	B	C	4D
C1989	B	C	4D
C1990	B	C	4D
C1991	B	C	4D
C1992	A	C	4D
C1993	A	D	5C
C1994	A	D	5D
C1995	B	C	4D
C1996	B	C	4D
C1997	B	C	2E
C1998	B	C	2F

REF.NO.	LOCATION		
C1999	B	C	3E
CONNCTOR			
CN1902	A	D	3F
DIODE			
D1901	B	C	3B
D1923	A	D	1A
D1924	A	D	1B
D1941	A	C	1D
D1943	B	C	3C
D1944	B	C	5C
IC			
IC1901	A	C	4D
IC1902	A	C	2C
IC1903	A	C	4B
IC1904	B	C	2B
IC1905	B	C	2C
IC1906	A	D	5F
IC1907	A	C	1F
COIL			
L1931	A	D	1C
L1941	A	D	2D
L1942	A	D	1C
L1943	A	D	2E
L1944	A	D	2D
L1945	A	D	1D
TRANSISTOR			
Q1901	A	C	5B
Q1922	A	D	4F
Q1941	A	C	1D
Q1942	A	C	1D

REF.NO.	LOCATION		
Q1943	A	C	2D
Q1944	A	C	2D
Q1945	B	C	5C
Q1946	A	C	3E
Q1947	A	C	3E
Q1948	A	C	2E
Q1949	A	C	2E
Q1950	A	C	2E
Q1951	A	C	1E
Q1952	A	C	1E
Q1953	A	C	1D
Q1954	A	C	2D
Q1955	A	C	2D
RESISTOR			
R1901	B	C	3A
R1902	B	C	4A
R1903	B	C	4A
R1904	A	C	4A
R1905	A	C	3C
R1906	A	C	3C
R1907	B	C	4B
R1908	A	C	4A
R1909	A	C	4A
R1910	A	C	5A
R1911	A	C	5C
R1912	A	C	5B
R1913	B	C	5B
R1914	A	C	5B
R1915	B	C	5B
R1916	B	C	5B
R1917	B	C	5B
R1918	A	C	5B

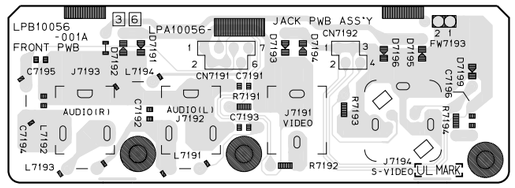
REF.NO.	LOCATION		
R1919	A	C	5B
R1920	B	C	5B
R1921	B	C	5C
R1922	B	C	5C
R1923	A	C	5B
R1924	A	C	5B
R1925	A	C	5B
R1926	A	C	4C
R1931	B	C	3C
R1932	B	C	3C
R1933	B	C	3C
R1934	B	C	3E
R1935	A	C	5E
R1936	A	C	5E
R1937	B	C	3E
R1938	B	C	3F
R1939	B	C	2E
R1940	B	C	2E
R1941	A	C	1D
R1942	B	C	1D
R1943	B	C	1D
R1944	B	C	1D
R1945	B	C	1D
R1946	A	C	1D
R1947	B	C	2D
R1948	A	C	2D
R1949	B	C	1C
R1950	B	C	2C
R1951	A	C	2D
R1952	A	C	2C
R1953	B	C	1C
R1954	B	C	1C
R1955	B	C	5C
R1956	A	C	5D

REF.NO.	LOCATION		
R1957	B	C	3E
R1958	B	C	2E
R1959	A	C	3E
R1960	B	C	3E
R1961	A	C	2E
R1962	B	C	2E
R1963	B	C	1E
R1964	B	C	1E
R1965	B	C	1E
R1966	B	C	1E
R1967	B	C	2E
R1968	A	C	2D
R1969	B	C	1D
R1970	B	C	1D
R1971	B	C	2D
R1972	B	C	1D
R1973	B	C	2D
R1974	B	C	5D
R1975	B	C	4D
R1976	B	C	3F
R1977	B	C	4D
R1978	B	C	4D
R1979	B	C	3D
R1980	B	C	3D
R1981	A	C	3D
R1982	A	C	3D
R1983	B	C	3E
R1984	B	C	3E
R1985	A	C	3C
R1986	A	C	3C
R1987	A	C	3C
R1988	A	C	3C
R1989	A	C	1E

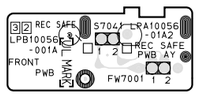
REF.NO.	LOCATION		
R1990	A	C	5F
R1991	A	C	3C
R1992	B	C	3C
R1993	A	C	4D
R1994	A	C	5D
R1995	B	C	4E
R1996	B	C	5F
R1997	A	C	4C
R1998	B	C	4C
R1999	B	C	1E
OTHER			
CF1941	A	D	3D
K1901	A	D	2B
K1931	A	D	1B
K1932	A	D	1C
LC1901	A	D	5E
RA1901	A	C	4C
RA1902	A	C	4C
RA1931	A	C	2B
RA1932	A	C	2C
X1941	A	D	4E

4.22 SW/DISPLAY, REC SAFETY, JACK AND JOG CIRCUIT BOARDS

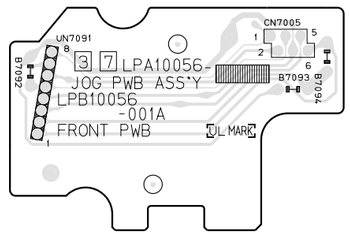
<36>JACK
LPB10056-001A



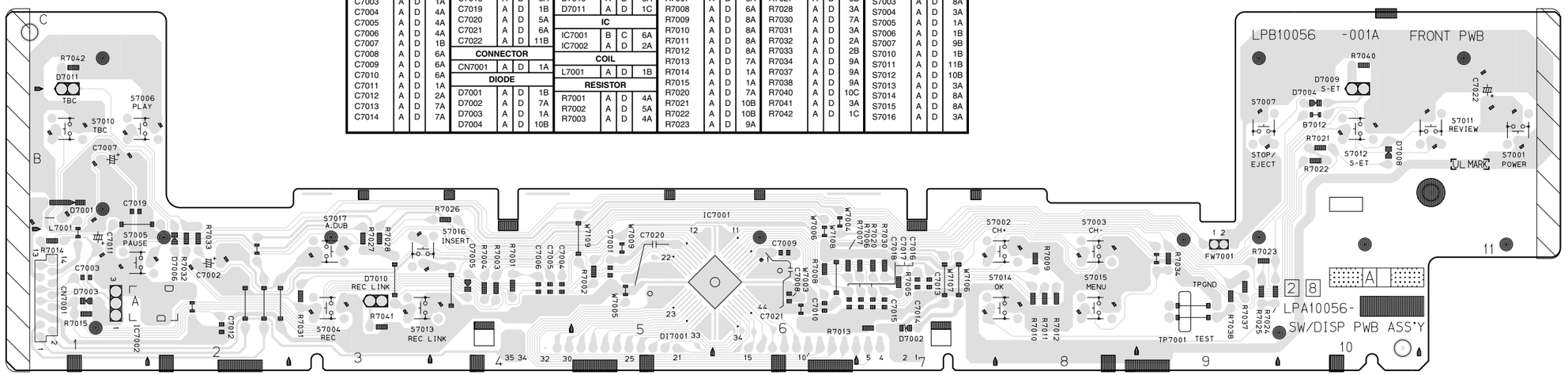
<32>REC SAFETY
LPB10056-001A



<37>JOG
LPB10056-001A



<28>SW/DISPLAY
LPB10056-001A

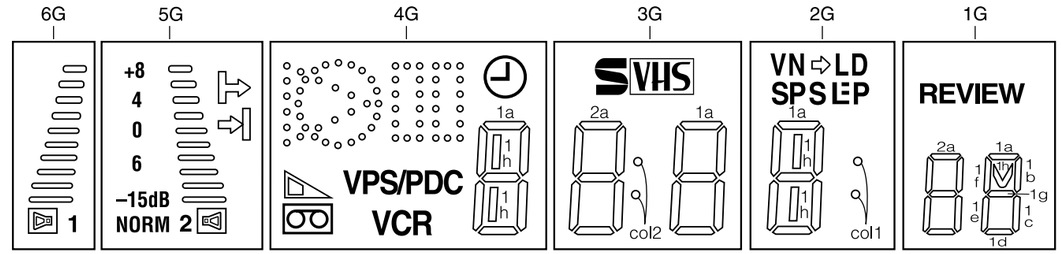


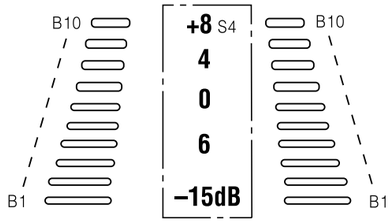
COMPONENT PARTS LOCATION GUIDE <SW/DISPLAY>

REF.NO.	LOCATION
CAPACITOR	
C7001	A D 5A
C7002	A D 2A
C7003	A D 1A
C7004	A D 4A
C7005	A D 4A
C7006	A D 4A
C7007	A D 1B
C7008	A D 6A
C7009	A D 6A
C7010	A D 6A
C7011	A D 1A
C7012	A D 2A
C7013	A D 7A
C7014	A D 7A
C7015	A D 7A
C7016	A D 7A
C7017	A D 7A
C7018	A D 6A
C7019	A D 1B
C7020	A D 5A
C7021	A D 6A
C7022	A D 11B
CONNECTOR	
CN7001	A D 1A
DIODE	
D7001	A D 1B
D7002	A D 7A
D7003	A D 1A
D7004	A D 10B
D7005	A D 4A
D7006	A D 2A
D7008	A D 10B
D7010	A D 3A
D7011	A D 1C
IC	
IC7001	B C 6A
IC7002	A D 2A
COIL	
L7001	A D 1B
RESISTOR	
R7001	A D 4A
R7002	A D 5A
R7003	A D 4A
R7004	A D 4A
R7005	A D 7A
R7006	A D 7A
R7007	A D 6A
R7008	A D 6A
R7009	A D 8A
R7010	A D 8A
R7011	A D 8A
R7012	A D 8A
R7013	A D 7A
R7014	A D 1A
R7015	A D 1A
R7020	A D 7A
R7021	A D 10B
R7022	A D 10B
R7023	A D 9A
R7024	A D 9A
R7025	A D 9A
R7026	A D 4B
R7027	A D 3B
R7028	A D 3A
R7030	A D 7A
R7031	A D 3A
R7032	A D 2A
R7033	A D 2B
R7034	A D 9A
R7037	A D 9A
R7038	A D 9A
R7040	A D 10C
R7041	A D 3A
R7042	A D 1C
SWITCH	
S7001	A D 11B
S7002	A D 8A
S7003	A D 8A
S7004	A D 3A
S7005	A D 1A
S7006	A D 1B
S7007	A D 9B
S7010	A D 1B
S7011	A D 11B
S7012	A D 10B
S7013	A D 3A
S7014	A D 8A
S7015	A D 8A
S7016	A D 3A

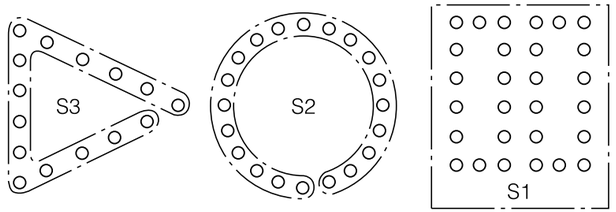
4.23 FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT





(6G, 5G)



(4G)

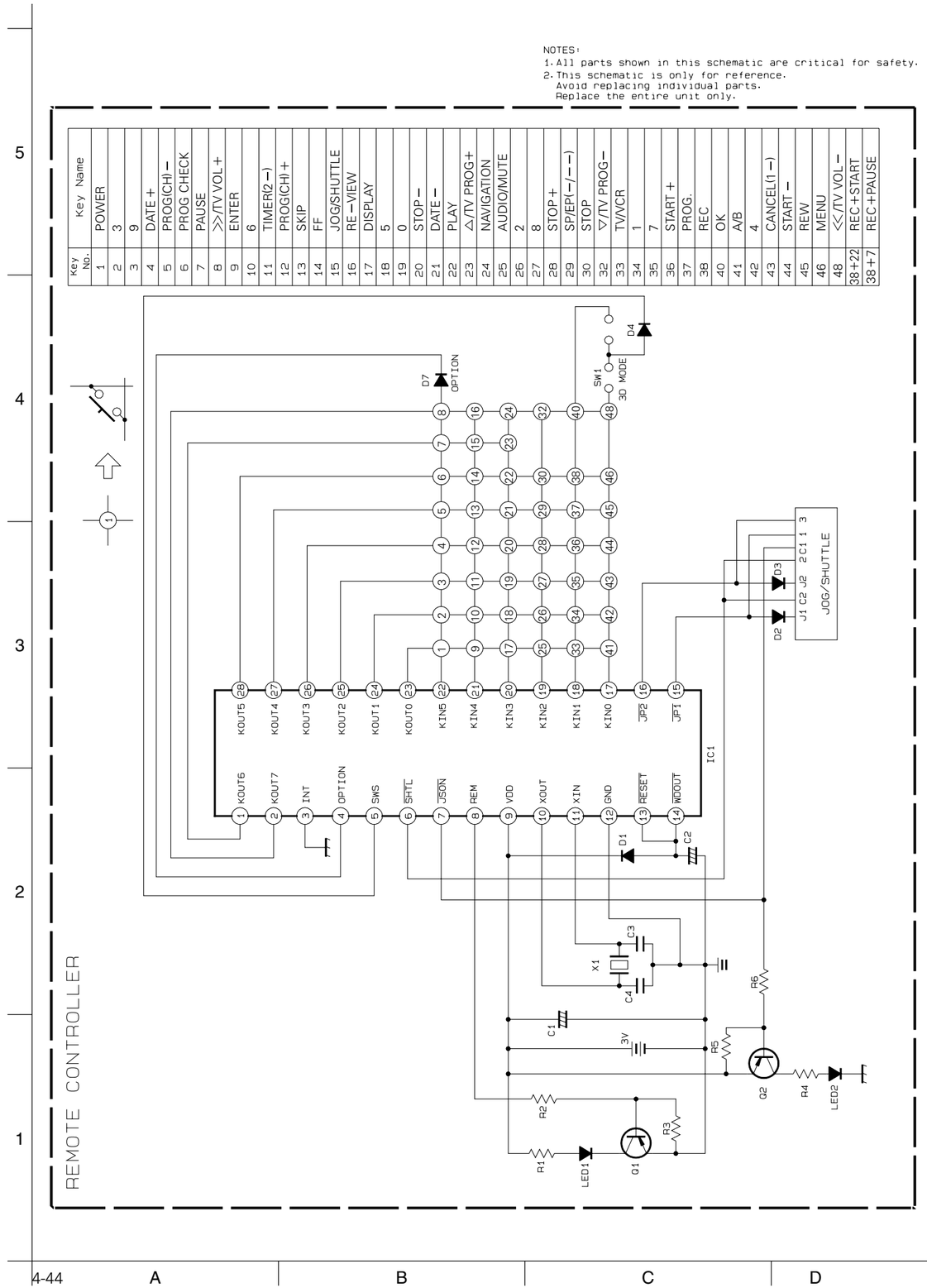
ANODE CONNECTION

	6G	5G	4G	3G	2G	1G
P 1	—	⇨	S2	1a	1a	1a
P 2	—	⇨	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	🕒	1c	1c	1c
P 6	▣	▣	◺	1e	1e	1e
P 7	B10	B10	📼	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	= (SEP)	2d
P16	B1	B1	1h	SVHS	LP (SEP)	REVIEW

4.24 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

Key No.	Key Name
1	POWER
2	3
3	9
4	DATE +
5	PROG(CH) –
6	PROG CHECK
7	PAUSE
8	>>/TV VOL +
9	ENTER
10	6
11	TIMER(2 –)
12	PROG(CH) +
13	SKIP
14	FF
15	JOG/SHUTTLE
16	RE – VIEW
17	DISPLAY
18	5
19	0
20	STOP –
21	DATE –
22	PLAY
23	△/TV PROG +
24	NAVIGATION
25	AUDIO/MUTE
26	2
27	8
28	STOP +
29	SP/EP(– / – –)
30	STOP
32	▽/TV PROG –
33	TV/VCR
34	1
35	7
36	START +
37	PROG.
38	REC
40	OK
41	A/B
42	4
43	CANCEL(1 –)
44	START –
45	REW
46	MENU
48	<</TV VOL –
38+22	REC + START
38+7	REC + PAUSE



4.25 VOLTAGE CHARTS

<VIDEO/AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	4.4	2.2
2	2.9	2.9
3	2.5	2.5
4	1.9	1.6
5	1.9	1.6
6	2.4	2.1
7	1.5	0.9
8	0	0
9	2.6	3.1
10	3.0	3.0
11	3.0	3.0
12	2.8	2.6
13	3.0	3.0
14	3.7	2.4
15	0	0
16	2.8	2.8
17	1.9	1.9
18	2.8	2.8
19	0	1.8
20	2.8	2.8
21	1.6	1.9
22	2.8	2.8
23	3.1	2.9
24	5.0	5.0
25	0.4	0.4
26	0	0
27	1.3	2.3
28	2.8	2.4
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.7	2.7
33	5.0	5.0
34	2.7	2.2
35	5.0	5.0
36	2.7	2.5
37	2.3	2.1
38	0.2	0.2
39	1.2	1.2
40	-	-
41	2.5	2.5
42	-	-
43	0	0
44	2.2	2.2
45	4.6	4.6
46	4.6	4.6
47	3.0	3.0
48	2.5	2.5
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	2.3	2.3
53	2.3	2.3
54	2.4	2.4
55	2.1	2.1
56	0.5	0.5
57	2.3	1.8
58	8.2	8.2
59	4.8	4.6
60	4.6	4.6
61	4.1	3.8
62	4.1	3.7
63	2.3	2.3
64	2.3	2.3
65	0.6	2.7
66	3.2	3.2
67	3.3	3.3
68	3.3	3.3
69	2.3	2.3

MODE PIN NO.	REC	PLAY
70	0	0
71	0.3	0.3
72	0.2	0.2
73	0.2	0.2
74	2.3	2.3
75	2.7	2.7
76	0	0
77	2.7	2.7
78	0.3	0.3
79	0.2	0.2
80	0.2	0.2
81	2.3	2.3
82	0.8	0.8
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.4	2.4
87	1.6	1.6
88	2.3	2.5
89	2.3	2.3
90	2.3	2.3
91	0	0
92	0	0
93	0	2.5
94	0	1.0
95	0	0
96	2.4	2.4
97	2.7	2.4
98	2.5	2.4
99	5.0	5.0
100	5.0	5.0
101	0	0
102	0	0
103	0	0
104	2.3	2.3
105	2.5	2.3
106	2.4	2.3
107	5.0	5.0
108	0	0
109	0	0
110	0	0
111	0	2.4
112	2.5	2.5
113	0.5	0.5
114	0	0
115	2.5	2.5
116	2.5	2.5
117	2.5	2.5
118	0	0
119	2.5	2.5
120	0	0
Q5		
E	5.0	2.8
C	0	0
B	4.4	2.1
Q7		
E	1.6	1.6
C	3.4	3.4
B	2.3	2.3
Q8		
E	2.8	2.8
C	5.0	5.0
B	3.4	3.4
Q9		
E	3.4	3.4
C	0	0
B	2.8	2.8
Q12		
E	2.1	2.1
C	0	0

MODE PIN NO.	REC	PLAY
B	1.4	1.4
Q17		
E	0	0
C	0	0
B	4.8	4.8
Q21		
E	2.3	2.3
C	0	0
B	1.7	1.7
Q24		
E	2.8	2.8
C	0	0
B	2.2	2.2
Q38		
E	3.3	3.3
C	5.0	5.0
B	4.0	4.0
Q401		
E	9.4	0
C	0	0
B	8.9	0
Q402		
E	7.3	0
C	0	0
B	6.8	0
Q403		
E	0	0
C	0	0
B	4.9	0
Q404		
E	0	0
C	0	11.2
B	9.2	0
Q405		
E	11.1	11.3
C	11.1	0
B	10.4	11.2
Q2001		
E	-16.1	0
C	0	0
B	-22.5	0.7
Q2002		
E	-16.1	0
C	0	0
B	-22.1	0.7
Q2003		
E	5.0	5.0
C	-22.3	5.0
B	5.0	0
Q2004		
E	0	0
C	5.0	0
B	0.6	4.2
Q2052		
E	10.9	11.0
C	10.6	4.0
B	10.1	11.0
Q2053		
E	0	0
C	0	10.9
B	4.8	0
Q2054		
E	10.6	4.0
C	10.5	0.3
B	9.9	4.0
Q2061		
E	0	0
C	7.5	0.3
B	0	0.3
Q2062		

MODE PIN NO.	REC	PLAY
E	10.6	4.0
C	10.5	0.3
B	9.9	4.0
Q2102		
E	0	0
C	0	0
B	4.6	4.6
Q2103		
E	0	0
C	0	0
B	-0.2	-0.2
Q2104		
E	4.9	4.9
C	-0.3	-0.3
B	4.9	4.9
Q2105		
E	0	0
C	4.9	4.9
B	0	0
Q2108		
E	2.0	2.0
C	8.4	8.4
B	2.6	2.6
Q2251		
E	5.0	5.0
C	1.7	1.9
B	5.0	5.0
CN1		
4	0	0
5	0	0
6	0	0
7	0	0
8	2.5	2.3
9	2.5	2.3
10	2.5	2.3
11	2.5	2.3
12	2.7	2.4
13	2.7	2.4
14	2.7	2.4
15	0	0
16	0	0
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.3	2.5
7	2.3	2.5
CN2002		
1	0	0
2	0	0
CN2051		
1	7.6	0.2
2	0	0
3	0	0
4	0	0

<AUDIO ERASE>

MODE PIN NO.	REC	PLAY
Q2051	-	-
CN2052		
1	7.6	0.2
2	0	0
3	0	0
4	0	0

<VSC>

MODE PIN NO.	REC	PLAY
IC2501		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	-	-
11	-	-
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	5.0	5.0
19	0	1.4
20	5.0	5.0
21	0	0
22	0	0
23	0	0
24	5.0	5.0
25	5.0	5.0
26	5.0	5.0
27	5.0	5.0
28	5.0	5.0
29	5.0	5.0
30	5.0	5.0
31	5.0	5.0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	5.0	5.0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	2.4	2.4
44	0	0
45	2.5	2.5
46	2.5	2.5
47	2.5	2.5
48	2.5	2.5
49	2.5	2.5
50	2.5	2.5
51	2.5	2.5
52	2.5	2.5
53	5.0	5.0

MODE PIN NO.	REC	PLAY
54	0.6	0.4
55	0	0
56	0	0
57	0	0
58	4.9	4.9
59	5.0	5.0
60	0	0
61	5.0	5.0
62	0	0
63	0	0
64	0	0
Q2501		
E	0	0
C	0	0
B	0.4	0.2
Q2502		
E	0	0
C	0.4	0.2
B	0	0

<SYSTEM CONTROL>

MODE PIN NO.	REC	PLAY
IC3001		
1	-	2.5
2	0	0
3	-	2.5
4	2.4	2.4
5	0	0.4
6	2.5	2.5
7	2.4	2.4
8	2.4	2.4
9	5.0	5.0
10	5.0	5.0
11	0	0
12	0	0
13	0	2.1
14	4.7	4.7
15	4.3	4.6
16	0.6	2.7
17	0	0
18	0	0
19	3.3	3.3
20	1.1	1.1
21	0	0
22	0	1.0
23	0	0
24	4.8	4.8
25	0	0
26	5.0	5.0
27	5.0	5.0
28	5.0	5.0
29	4.9	4.9
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	1.8
39	4.3	4.3
40	0	0

MODE PIN NO.	REC	PLAY
41	4.9	4.9
42	4.4	4.4
43	0	0
44	0	0
45	4.9	4.9
46	0	0
47	0	0
48	0.2	0.2
49	4.6	4.6
50	4.6	4.6
51	4.9	4.9
52	1.1	1.1
53	4.3	4.3
54	0	-
55	-	-
56	0	0
57	0.3	0
58	5.0	0
59	0.1	0.1
60	0	0
61	0	0
62	0	0
63	0	0
64	-	-
65	-	-
66	-	-
67	-	-
68	0	0
69	-	-
70	5.0	5.0
71	5.0	5.0
72	4.6	4.6
73	0	0
74	0	0
75	4.7	4.7
76	4.5	4.5
77	0	0
78	0	0
79	4.8	4.8
80	0	0
81	5.0	5.0
82	5.0	5.0
83	2.4	2.4
84	0	0
85	0	0
86	4.7	4.7
87	4.9	0
88	5.0	5.0
89	0	0
90	0	0
91	3.0	3.0
92	5.0	5.0
93	0	0
94	5.0	5.0
95	5.0	5.0
96	0	0
97	5.0	5.0
98	0.3	0.3
99	0	2.5
100	2.5	2.5
101	2.8	2.8
102	1.2	1.2
103	5.0	5.0
104	4.8	4.8
105	4.9	4.9
106	4.8	4.8
107	0	0
108	1.5	1.5
109	5.0	5.0
110	0	0

MODE PIN NO.	REC	PLAY
111	0	0
112	2.4	2.4
IC3002		
1	5.0	5.0
2	5.0	5.0
3	0	0
IC3003		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.7	4.7
6	4.7	4.7
7	0	0
8	5.0	5.0
IC3004		
1	11.7	11.7
2	0.4	0.4
3	0	0
4	0.3	0.3
5	11.7	11.7
6	11.7	11.7
7	0	0
8	0	0
9	0	0
IC3501		
1	3.4	3.4
2	0.3	0.3
3	0	0
4	0.3	0.3
5	11.9	11.9
6	11.9	11.9
7	0	0
8	0	0
9	0	0
IC3601		
1	0	0
2	0	0
3	0.2	0.2
4	0	4.0
5	4.7	4.7
6	0	0
7	0	0
8	0	0
9	0	4.0
10	0	0
11	-	-
12	9.2	0
13	0.4	0.4
14	0	0
15	0	0
16	5.0	5.0
IC3651		
1	0	0
2	0	0
3	0.2	0.2
4	5.7	5.7
5	0	0
6	4.6	4.6
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	4.1
13	0	0
14	0	0
15	0	0
16	5.0	5.0
Q3001		

MODE PIN NO.	REC	PLAY
E	0	0
C	11.7	11.7
B	0	0
Q3002		
E	0	0
C	4.7	4.7
Q3003		
E	0	0
C	4.3	4.6
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q3005		
E	5.0	5.0
C	5.7	5.7
B	5.6	5.6
Q3009		
E	0	0
C	0	0
B	0	0
Q3501		
E	3.4	3.4
C	3.4	3.4
B	4.0	4.0
Q4001		
E	0	0
C	0	0
B	4.9	4.9
Q4003		
E	0	0
C	0	0
B	4.8	4.8
CN3001		
1	11.7	11.7
2	0	0
3	1.4	1.4
4	0	0
5	1.5	1.5
CN3002		
1	0.4	0.4
2	0.4	0.4
CN3003		
1	0	0
2	2.5	2.5
3	2.8	2.8
4	5.1	5.1
5	0	0
6	5.0	5.0
7	-	-
8	10.9	10.9
CN3004		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	0	0
CN3011		
1	5.0	5.0
2	0	0
3	4.9	4.9
4	5.0	5.0
5	4.4	4.4
6	5.0	5.0
7	1.2	1.2
8	4.3	4.3
9	4.9	4.9
10	0	0
11	0	0
12	-18.4	-18.4
13	-14.8	-14.8

MODE PIN NO.	REC	PLAY
14	-27.2	-27.2
CN3012		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.9	4.9
6	0	0
CN3501		
1	0	0
2	0	0
3	0	0
4	5.0	5.0
5	0.3	0.1
6	0.3	0.1

<SW. REG>

MODE PIN NO.	REC	PLAY
IC5101		
1	61.4	59.8
2	-	-
3	0	0
4	-	-
5	-	-
IC5301		
1	5.7	5.7
2	5.1	5.1
3	4.5	4.5
4	0	0
5	11.7	11.7
6	11.0	11.0
7	11.7	11.7
8	5.7	5.7
9	1.3	1.3
10	4.5	4.5
Q5301		
E	21.4	21.4
C	0	0
B	21.4	21.4
Q5302		
E	0	0
C	21.4	21.4
B	0	0
Q5320		
E	26.1	26.1
C	0	0
B	26.1	26.1
Q5321		
E	0	0
C	26.1	26.1
B	0	0
Q5322		
E	5.7	5.7
C	-0.3	-0.3
B	5.7	5.7

<TUNER>

MODE PIN NO.	REC	PLAY
Q6501		
E	0	0
C	0	0
B	4.6	4.6
Q6502		
E	0	0
C	0	0
B	4.6	4.6
Q6551		
E	9.0	9.0
C	10.9	10.9
B	9.7	9.7
CN6701		
1	0	0
2	4.7	4.7
3	4.7	4.7
4	4.6	4.6
5	0	0
6	0	0
7	9.0	9.0
8	0	0
9	2.2	2.2

<CONNECTION>

MODE PIN NO.	REC	PLAY
Q7201		
E	0	0
C	5.0	5.0
B	0	0
CN501		
1	2.1	2.1
2	0	0
3	0.6	2.5
4	5.1	5.1
5	2.1	2.1
6	0.1	5.0
7	3.3	3.3
8	0	0
9	2.9	2.9
10	0	0
11	4.6	4.6
12	4.6	4.6
13	0	0
14	0.7	0.7
15	2.5	2.5
16	0	0
17	0.4	0.4
CN502		
1	0.2	5.0
2	4.6	4.6
3	4.6	4.6
4	2.1	2.1
5	5.0	5.0
6	5.0	5.0
7	0	0
8	0	0
9	0.6	2.5
10	2.1	2.1
11	3.3	3.3
12	2.9	2.9
13	2.3	2.3
14	0	0
15	0	0

MODE PIN NO.	REC	PLAY
16	2.4	2.0
17	1.4	2.3
18	4.7	4.7
19	2.9	2.9
20	0.2	0.2
21	0	0
22	0	0
23	0.2	0.2
24	0	0
25	2.4	2.4
26	0	0
27	2.5	2.3
28	0	0
29	3.7	2.4
30	2.8	2.8
CN901		
1	0	0
2	0	0
3	0	0
4	0	0
CN902		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
CN903		
1	3.7	3.7
2	0	0
3	0	0
4	0	0
5	0	0
6	2.4	2.4
7	0	0
8	0	0
9	0.2	0.2
10	10.9	10.9
11	1.2	1.2
12	5.1	5.1
CN904		
1	0	0
2	4.7	4.7
3	5.0	5.0
4	0	0
5	3.1	3.1
6	4.3	4.3
7	1.2	1.2
8	4.9	4.9
9	5.0	5.0
10	4.3	4.3
11	0	0
12	2.8	2.8
CN905		
1	4.4	4.4
2	4.6	4.6
3	0	0
4	0	0
5	0	0
CN907		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0.3	0.3
9	0	0
10	0	0
CN1901		

MODE PIN NO.	REC	PLAY
1	1.2	1.2
2	0	0
3	2.3	2.3
4	0	0
5	4.6	4.6
6	4.6	4.6
7	0	0
8	0	0
9	3.2	3.2
10	11.1	11.1
11	5.6	5.6
CN7103		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.4	2.4
7	5.0	5.0
8	4.8	4.8
9	5.0	5.0
10	4.8	4.8
11	4.4	4.4
12	1.2	1.2
13	5.0	5.0

<3D DIGITAL/4M>

MODE PIN NO.	REC	PLAY
IC1401	-	-
IC1402	-	-
IC1403	-	-
IC1404	-	-
Q1406	-	-
Q1407	-	-
Q1408	-	-
Q1410	-	-
Q1412	-	-
Q1413	-	-
Q1414	-	-
Q1417	-	-
Q1418	-	-
Q1419	-	-
CN1401		
1	2.1	2.1
2	0	0
3	0.6	2.5
4	5.1	5.1
5	2.1	2.1
6	0.1	5.0
7	3.3	3.3
8	0	0
9	2.9	2.9
10	0	0
11	4.6	4.6
12	4.6	4.6
13	0	0
14	0.7	0.7
15	2.5	2.5
16	0	0
17	2.4	2.4

<TERMINAL>

MODE PIN NO.	REC	PLAY
IC201	-	-
Q203	-	-
Q207	-	-
Q901	-	-
Q903	-	-
Q904	-	-
CN911		
1	0	0
2	3.0	3.0
3	0	0
4	2.4	2.4
5	0	0
6	2.3	2.3
7	0	0
8	0	0
9	0	0
10	-	-
11	0	0
12	0	0
13	0	0
14	0	0
CN912		
1	5.0	5.0
2	4.4	4.4
3	1.1	1.1
4	5.0	5.0
5	0	0
6	0.4	0.4
7	4.9	4.9
8	0	0
CN913		
1	3.7	3.7
2	0	0
3	0	0
4	0	0
5	0	0
6	2.4	2.4
7	0	0
8	0	0
9	0.2	0.2
10	10.9	10.9
11	1.2	1.2
12	5.1	5.1
CN914		
1	0	0
2	4.7	4.7
3	5.0	5.0
4	0	0
5	3.1	3.1
6	4.3	4.3
7	1.2	1.2
8	4.9	4.9
9	5.0	5.0
10	4.3	4.3
11	0	0
12	2.8	2.8
CN915		
1	4.4	4.4
2	4.6	4.6
3	0	0
4	0	0
5	0	0
CN917		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0

MODE PIN NO.	REC	PLAY
8	0.3	0.3
9	0	0
10	0	0

<DEMODULATOR>

MODE PIN NO.	REC	PLAY
IC1501		
1	9.0	9.0
2	4.5	4.5
3	4.4	4.4
4	4.4	4.4
5	4.5	4.5
6	4.5	4.5
7	4.4	4.4
8	4.4	4.4
9	5.4	5.4
10	3.8	3.8
11	3.0	3.0
12	4.4	4.4
13	4.5	4.5
14	0	0
15	-	-
16	-	-
17	0	0
18	4.4	4.4
19	4.6	4.6
20	4.6	4.6
21	1.3	1.3
22	5.2	5.2
23	5.1	5.1
24	4.4	4.4
25	4.5	4.5
26	4.5	4.5
27	4.5	4.5
28	3.6	3.6
CN1501		
1	0	0
2	4.7	4.7
3	4.7	4.7
4	4.6	4.6
5	0	0
6	0	0
7	9.0	9.0
8	0	0
9	2.2	2.2

<S-SUB>

MODE PIN NO.	REC	PLAY
IC501	-	-
IC502	-	-
CN511		
1	0.2	5.0
2	4.6	4.6
3	4.6	4.6
4	2.1	2.1
5	5.0	5.0

MODE PIN NO.	REC	PLAY
6	5.0	5.0
7	0	0
8	0	0
9	0.6	2.5
10	2.1	2.1
11	3.3	3.3
12	2.9	2.9
13	2.3	2.3
14	0	0
15	0	0
16	2.4	2.0
17	1.4	2.3
18	4.7	4.7
19	2.9	2.9
20	0.2	0.2
21	0	0
22	0	0
23	0.2	0.2
24	0	0
25	2.4	2.4
26	0	0
27	2.5	2.3
28	0	0
29	3.7	2.4
30	2.8	2.8
CN512		
1	0	0
2	3.0	3.0
3	0	0
4	2.4	2.4
5	0	0
6	2.3	2.3
7	0	0
8	0	0
9	0	0
10	-	-
11	0	0
12	0	0
13	0	0
14	0	0

<NAVIGATION>

MODE PIN NO.	REC	PLAY
IC3301	-	-
IC3401		
1	0.4	0.4
2	1.2	1.2
3	5.0	5.0
4	5.0	5.0
5	5.0	5.0
6	0	0
7	0	0
8	0	0
9	4.8	4.8
10	0	0
11	0	0
12	4.4	4.4
13	0	0
14	4.4	4.4
15	1.1	1.1
16	5.0	5.0
IC3402		
1	0.4	0.4

MODE PIN NO.	REC	PLAY
2	5.0	5.0
3	0.4	0.4
4	0.4	0.4
5	0.4	0.4
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	5.0	5.0
13	0.5	0.5
14	5.0	5.0
15	5.0	5.0
16	5.0	5.0
IC3403	-	-
CN3401		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.4	2.4
7	5.0	5.0
8	4.8	4.8
9	5.0	5.0
10	4.8	4.8
11	4.4	4.4
12	1.2	1.2
13	5.0	5.0
CN3402		
1	0	0
2	4.9	4.9
3	0.4	0.4
4	0	0
5	5.0	5.0
6	1.1	1.1
7	4.4	4.4
8	5.0	5.0

<SW/DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	5.0	5.0
2	2.1	2.3
3	0	0
4	2.1	2.3
5	5.0	5.0
6	5.0	5.0
7	5.0	5.0
8	5.0	5.0
9	5.0	5.0
10	4.8	5.0
11	5.0	5.0
12	4.3	4.3
13	1.2	1.2
14	5.0	5.0
15	4.4	4.4
16	-27.1	-27.1
17	-27.1	-27.1
18	-26.9	-26.9
19	-27.1	-27.1
20	4.6	4.6

MODE PIN NO.	REC	PLAY
21	-	-
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	5.0	5.0
IC7002		
1	5.0	5.0
2	5.0	5.0
3	0	0
CN7001		
1	-27.2	-27.2
2	-14.8	-14.8
3	-18.4	-18.4
4	0	0
5	0	0
6	4.9	4.9
7	4.3	4.3
8	1.2	1.2
9	5.0	5.0
10	4.4	4.4
11	5.0	5.0
12	4.9	4.9
13	0	0
14	5.0	5.0
FW7001		
1	5.0	5.0
2	0	0

<REC SAFETY>

MODE PIN NO.	REC	PLAY
FW7001		
1	5.0	5.0
2	0	0

<JACK>

MODE PIN NO.	REC	PLAY
CN7191		
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
CN7192		
1	0	0
2	0	0
3	0	0
4	0	0

<JOG>

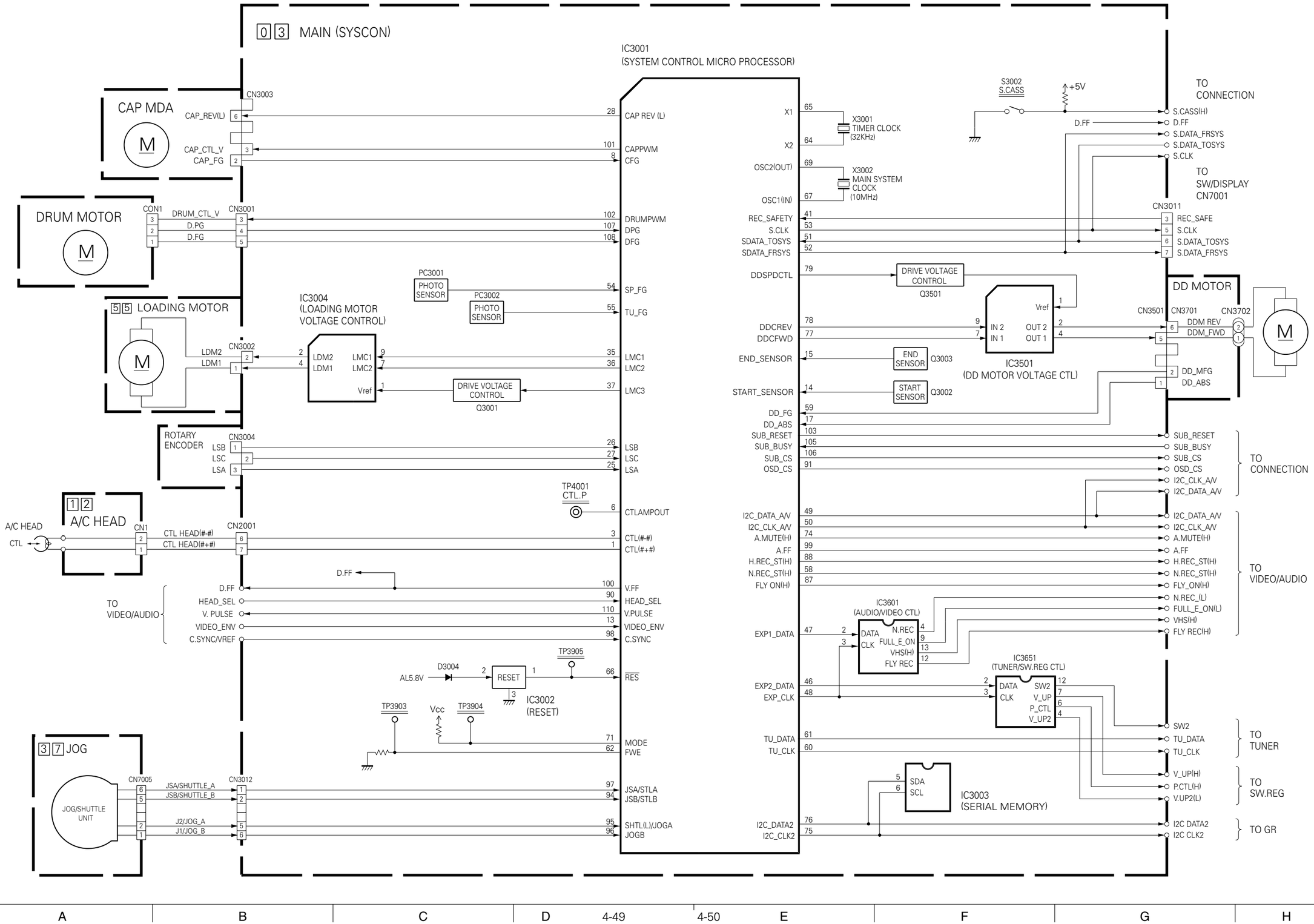
MODE PIN NO.	REC	PLAY
CN7005		
1	0	0
2	4.9	4.9
3	0	0
4	0	0
5	0	0
6	0	0

<GR>

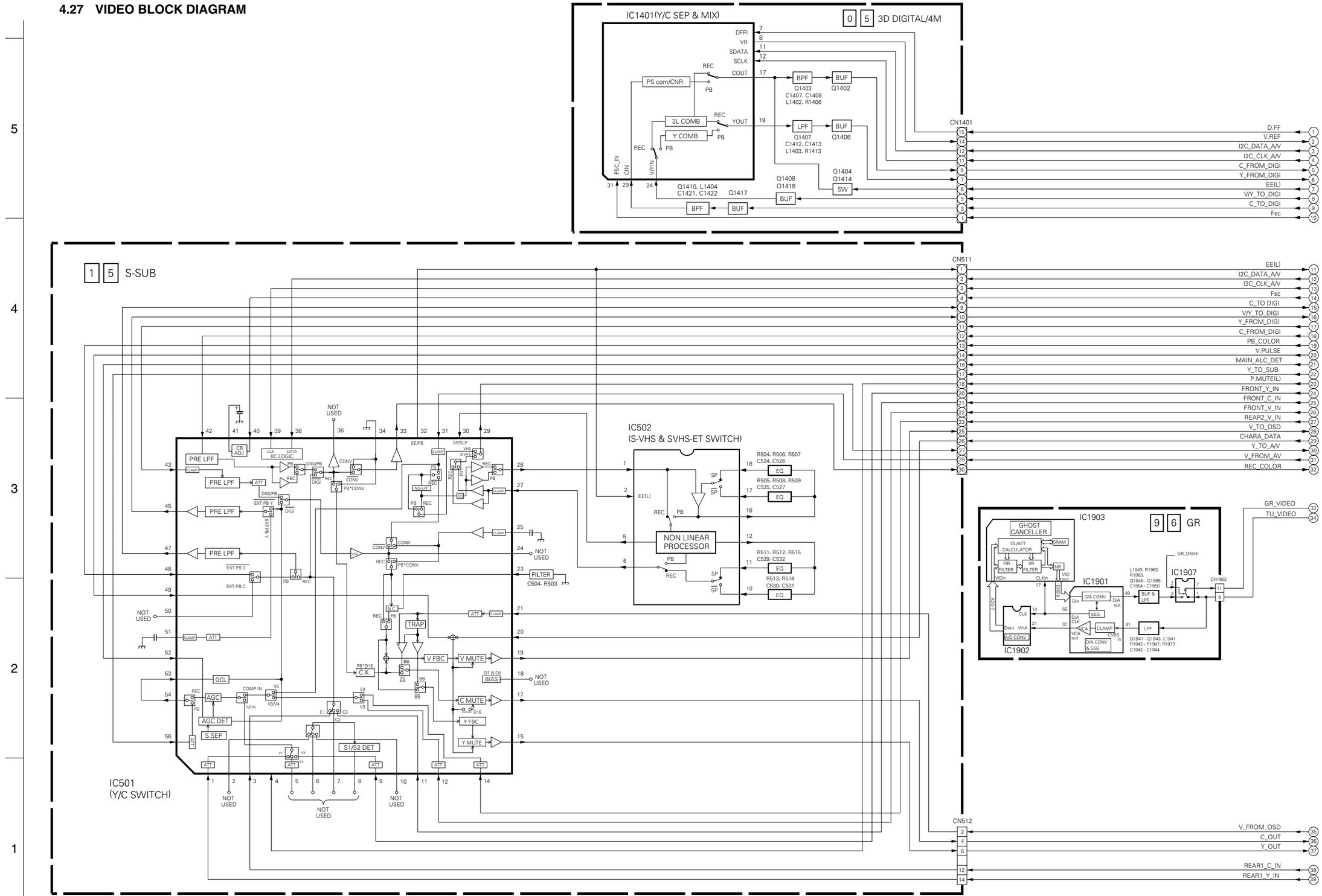
MODE PIN NO.	REC	PLAY
IC1901	-	-
IC1902	-	-
IC1903	-	-
IC1904	-	-
IC1905	-	-
IC1906		
1	2.5	2.5
2	0	0
3	5.5	5.5
IC1907		
1	2.3	2.3
2	3.0	3.0
3	1.9	1.9
4	0	0
5	0	0
6	5.0	5.0
7	1.2	1.2
8	0	0
Q1901	-	-
Q1922		
E	5.0	5.0
C	5.6	5.6
B	5.5	5.5
Q1941	-	-
Q1942	-	-
Q1943	-	-
Q1944	-	-
Q1945	-	-
Q1946	-	-
Q1947	-	-

MODE PIN NO.	REC	PLAY
Q1948	-	-
Q1949	-	-
Q1950	-	-
Q1951	-	-
Q1952	-	-
Q1953	-	-
Q1954	-	-
Q1955	-	-
CN1902		
1	5.6	5.6
2	11.1	11.1
3	3.2	3.2
4	0	0
5	0	0
6	4.6	4.6
7	4.6	4.6
8	0	0
9	2.3	2.3
10	0	0
11	1.2	1.2

4.26 SYSTEM CONTROL BLOCK DIAGRAM



4.27 VIDEO BLOCK DIAGRAM



0 3 MAIN (VIDEO, CONNECTION)

TO SYSCON
I2C_DATA_A/V
I2C_CLK_A/V
P.MUTE(L)
V.PULSE
C.SYNC/V.REF
D.FF

TO TUNER
RF_VIDEO
TU_VIDEO

CN501
D.FF
V.REF
I2C_DATA_A/V
I2C_CLK_A/V
C_FROM_DIGI
Y_FROM_DIGI
EE(L)
V/Y_TO_DIGI
C_TO_DIGI
Fsc

CN502
EE(L)
I2C_DATA_A/V
I2C_CLK_A/V
Fsc
C_TO_DIGI
V/Y_TO_DIGI
Y_FROM_DIGI
C_FROM_DIGI
PB_COLOR
V.PULSE
MAIN_ALC_DET
Y_TO_SUB
P.MUTE(L)
FRONT_Y_IN
FRONT_C_IN
FRONT_V_IN
REAR2_V_IN
V_TO_OSD
CHARA_DATA
Y_TO_AV
V_FROM_AV
REC_COLOR

CN1901
GR_VIDEO
TU_VIDEO

3 6 JACK
CN902
FRONT_VIDEO
CN901
FRONT_Y_IN
FRONT_C_IN
CN7191
CN7192
J7191 FRONT VIDEO IN
J7194 FRONT_S_IN
J905 REAR_V.IN
J911 REAR_V.OUT
J901 REAR_S_IN
J903 REAR_S_OUT
CN911
V_FROM_OSD
C_OUT
Y_OUT
REAR1_C_IN
REAR1_Y_IN

CN903
CN913
CN904
CN914

Q7-Q9 C72,C73 R29,R30 L19
TP106 PB.FM
Q21 BUF
BUF & EQ
Q5 BUF
2Fsc
Q12 BUF
Fsc
Q24 BUF
X2
NOT USED
fsc IN
TP111 D.FF

IC1 (VIDEO & AUDIO SIGNAL PROCESSOR)

TO SYSCON
D.FF
VIDEO_ENV
HEAD_SEL
NORM/MESEC/S
S.CASS(H)
VHS(H)
SUB_BUSY
SUB_RESET
P.MUTE(L)
SYNC_DET(H)
OSD_CS
EDS_CS
STB
EDS(H)
SUB_CS
S.CLK
SD_FRSYS
SD_TOSYS

CN1
U.DRUM
VIDEO HEAD
SP CH2
SP CH1
EP/LP CH2
EP/LP CH1

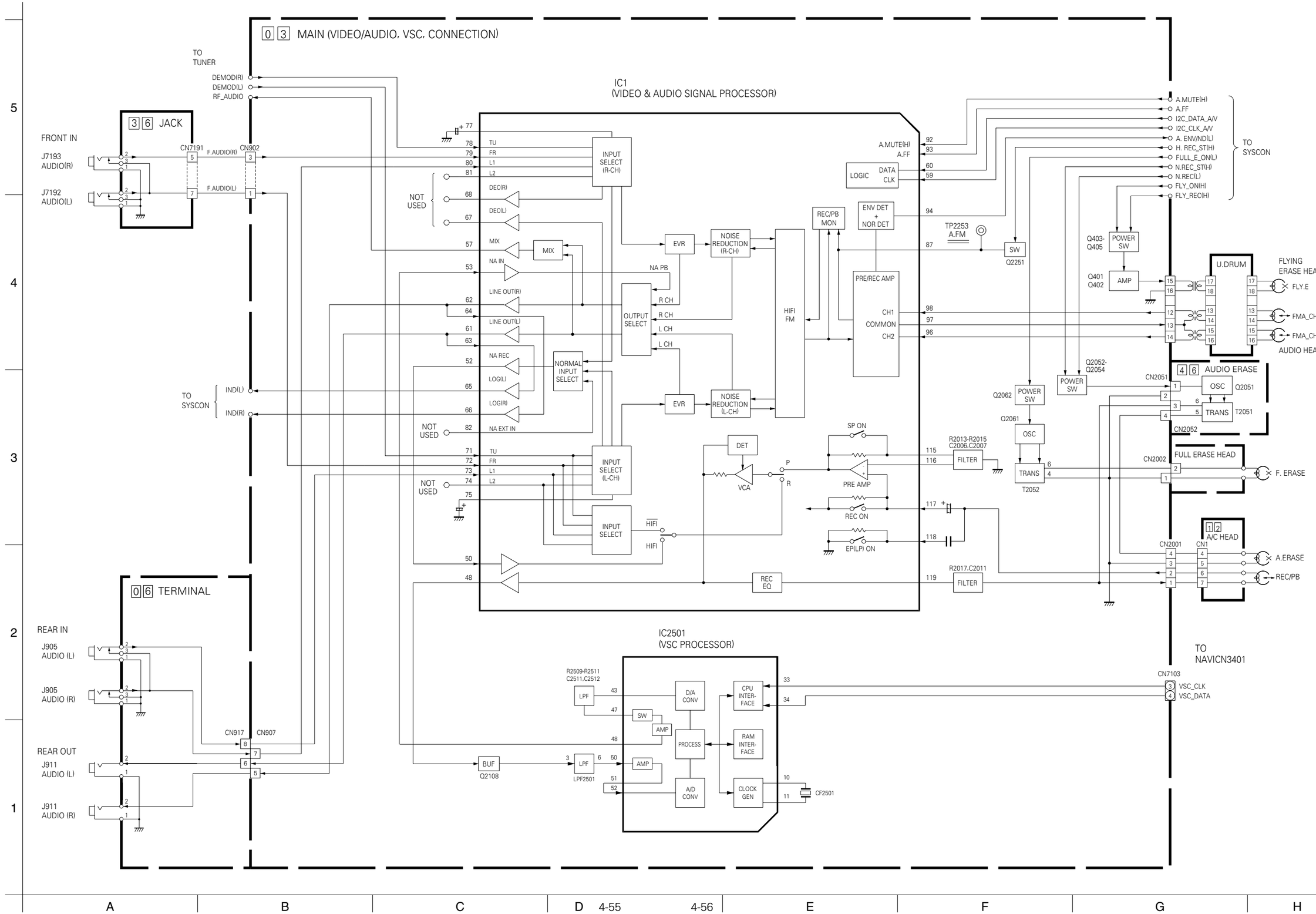
Q38.L24.L28 C15.C106.C109 C110.R92.R93 FILTER
Q17 SW

IC201 (ON SCREEN DISPLAY)
D201
D204
Q203 SW
D206
D207
D205
CN912
CN3402
SD_FROSD
SCLK_TOOSD
SD_TOOSD
CSOSD_SUB
D3407

1 9 NAVIGATION
IC3401 (MULTIPLEXER/ DEMULTIPLEXER)
IC3301 (NAVIGATION PROCESSOR)
IC3402 (MULTIPLEXER/ DEMULTIPLEXER)
IC3403 (1M-BIT FLASH MEMORY)
CN7103
CN3401

0 6 TERMINAL

4.28 AUDIO BLOCK DIAGRAM



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